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ABSTRACT

This resource book for furniture renovation (refinishing and reupholstering) is one of four resource books developed for use in Code 30 or adult vocational programs in the home furnishings service area. Representative, illustrative, and informative materials contained in the resource book are Furniture Woods, Cuts and Matching Veneers, Wood Joints, Joints Used In Furniture Construction, Vocabulary of Wood, Wood Classification, Exotic Woods, Woods Physical Properties and Source Chart, Chronology of Furniture Styles, Dictionary of Upholstery Terms, Upholstery Materials and Supplies, Furniture Fabrics, Estimating Fabrics to Reupholster Various Pieces of Furniture, Removing Old Cover, Construction Processes in Upholstery, Spring and Spring Work, Attaching Burlap, Determining Size of Tack for Job, and Installing Final Coverings. (YLB)

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Resource Book for Furniture Renovation Refinishing and Reupholstering

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FORWARD

This publication contains illustrative and informative materials for teaching Furniture Renovation (Refinishing and Reupholstering).

Reference is made to these resource in the Suggested Curriculum Guide for Furniture Renovation (Refinishing and Reupholstering). In the guide, the word RESOURCE is identified in capital letters and pages from the Resource Book are listed.

These materials may be reprinted for classroom use.

1982

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Special appreciation is extended to the following coordinators, consultants and post-secondary instructors for their efforts in the development of this curriculum for the home furnishings service programs.

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FURNITURE WOODS

WOOD	SOURCE	APPEARANCE	CHARACTERISTICS	USES
Ash, *White*	Northeastern and Central United States.	Grayish through creamy white to reddish dark brown; straight grain and open pores.	Tough, heavy, hard; good shock resistance.	Baseball bats, tool handles, barrels, furniture -especially bentwood chair parts.
Basswood	Northern United States and Canada.	Creamy white to creamy brown with reddish markings; faint growth rings; wood rays darker than background; small pores.	Lightweight, moderately stiff; weak, low shock resistance.	Boxes, crates, millwork, furniture.
Birch, *Yellow*	Canada, Northeastern United States.	Creamy white to light reddish brown; extremely small wood pores.	Heavy, hard, strong and stiff; good shock resistance.	Spools, bobbins, dowels, wooden ware, furniture.
Butternut	North Central states, southern Canada.	Pale to dark brown with occasional dark streaks; large, open pores.	Soft to medium texture; moderate shock resistance.	Interior millwork and furniture.
Cedar, *Red*	Eastern two-thirds of United States.	Light red with light colored streaks throughout; knots and other natural markings.	Highly aromatic and moderately hard; brittle.	Storage chests, closet lining, lead pencils, small wooden ware.
Cherry, *Black*	Northeastern United States.	Light to dark reddish brown; straight grain; small individual pores.	Moderately hard and heavy; good shock and wear resistance.	Furniture, wooden ware, caskets, pattern making.
Elm, *Rock, American*	Eastern United States	Light brown to dark brown, often with shades of red; straight grain pattern with obvious light and dark boundaries.	Moderately hard and heavy; good shock resistance; excellent bending qualities.	Boxes, crates, barrels, furniture -especially bentwood chair parts.
Fir, *White, Douglas*	Pacific and Rocky Mountain states.	Creamy white to yellowish with obvious differences in spring and summer growth.	Moderately heavy, hard, and stiff; pronounced resin canals.	Construction, plywood, boxes, crates, hidden furniture parts.
Mahogany, *Honduras, Cuban, etc.*	Central America, Brazil, Peru, other tropical climates.	Yellowish brown through reddish brown to dark red; highly figured grain pattern; open pores.	Extremely stable, moderately hard, even textured, and heavy.	Furniture, paneling, pattern making, boatbuilding.
Maple, *Hard, Bird's Eye*	Northwestern and Great Lakes states, Canada	Creamy white to light reddish brown; straight grain; tiny pores; burl patterns available.	Heavy, hard, strong, and stiff; good shock resistance.	Flooring, furniture, boxes, crates, tool handles.
Oak, *Red, American White*	Eastern United States	Light grayish brown to reddish brown; striking grain figure; large, open pores.	Heavy, strong, hard; durable under exposure; wear resistant.	Flooring, furniture, barrels, interior millwork, boatbuilding.
Pine, *White*	Eastern and Western United States	Cream to light reddish brown; visible resin canals and obvious growth rings.	Moderately light, soft, stiff; good shock resistance.	Construction, boxes, crates, millwork, furniture.
Poplar, *Yellow*	Northeastern United States	Light yellow to brownish yellow with greenish tinge; even texture; straight grain; barely visible pores.	Medium to light weight; moderately hard, stiff, and shock resistant.	Interior millwork, wooden ware, furniture.
Redwood	Northern California	Deep reddish brown with obvious spring and summer growth rings.	Light, strong, stiff; moderately hard; marginally shock resistant.	Construction, millwork, outdoor furniture.
Rosewood, *Brazilian, etc.*	Brazil, Southern India, Ceylon	Various shades of dark brown to dark purple; conspicuous black streaks.	Very heavy, hard; extremely coarse texture.	Musical instruments, paneling, furniture, tool handles.
Teak	Burma, Java, Indo-China, East India.	Tawny yellow to dark brown with lighter and darker streaks; pattern similar to walnut.	Heavy, strong, oily, tough.	Paneling, furniture, floors, wooden ware, boatbuilding.
Walnut, *Black*	Eastern United States	Light gray brown to dark purple brown; wide variety of plain and highly figured patterns.	Very strong, stable; moderately heavy, stiff; good shock resistance.	Furniture, gun stocks, interior trim.

Reprinted from Home Decoration and Furnishings Occupations Curriculum Guide

SOLID CUTS

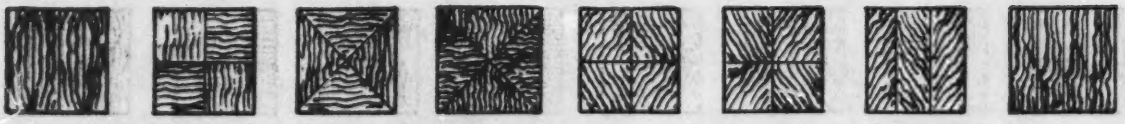
flat quarter rift

VENEER CUTS

flat quarter rotary

FIGURE I - A

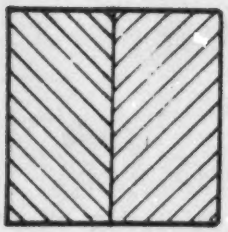
MATCHING VENEERS



book block box reversed box diamond reversed diamond v-match slide slip

FIGURE I - B

WOOD JOINTS



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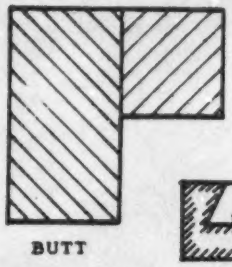

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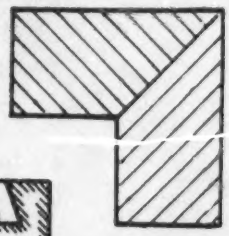

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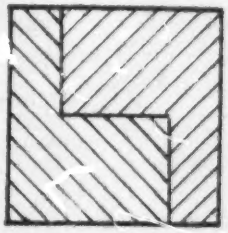

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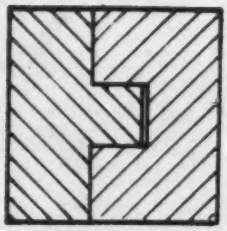

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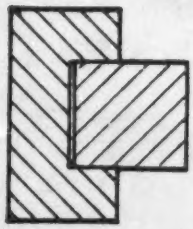

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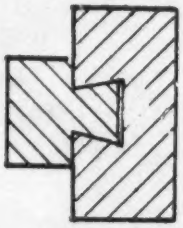

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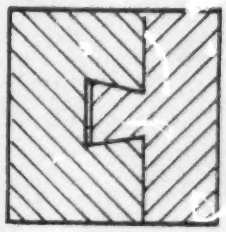

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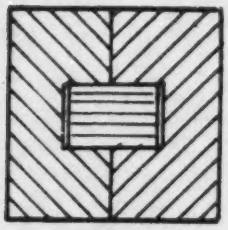

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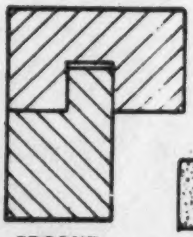
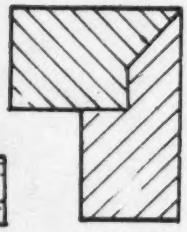


GROOVE

SCARF



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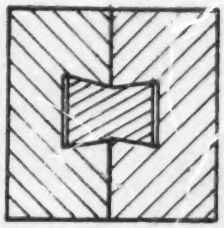

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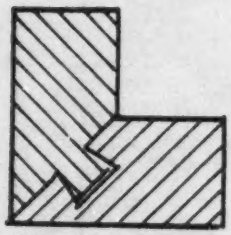

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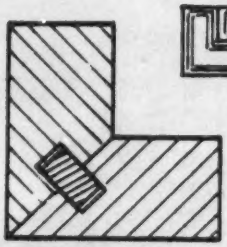

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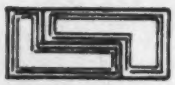

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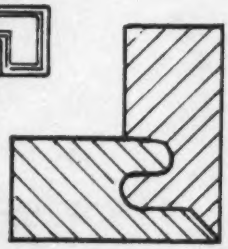

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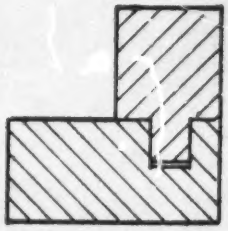

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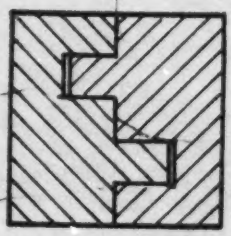

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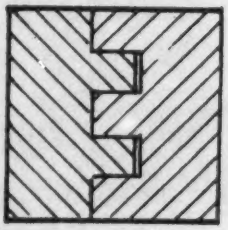

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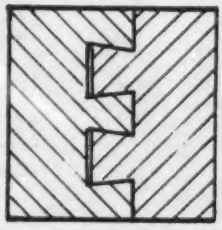

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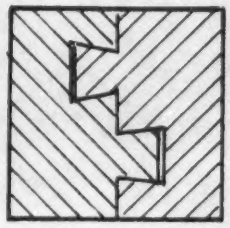
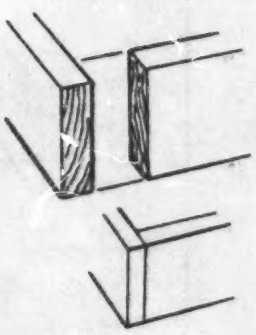


LAP DOVETAIL

JOINTS USED IN FURNITURE CONSTRUCTION



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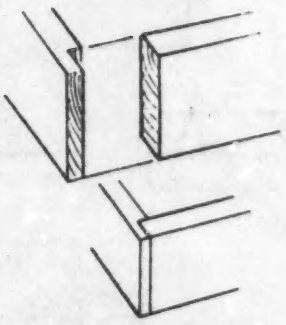

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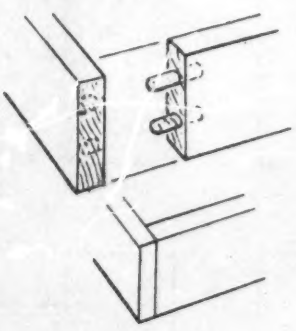

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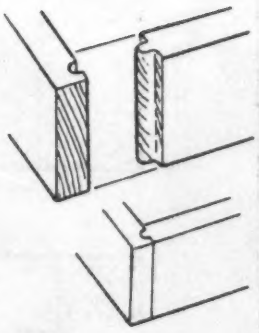
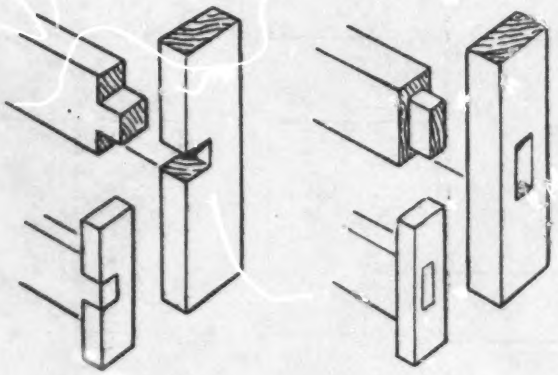


TONGUE AND GROOVE



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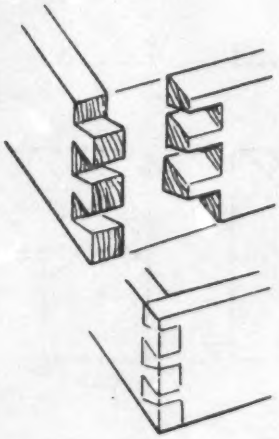

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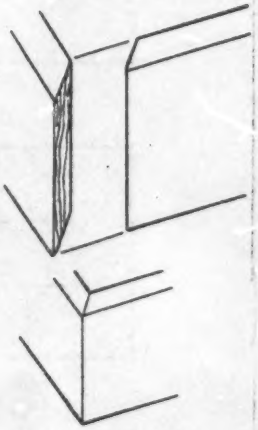

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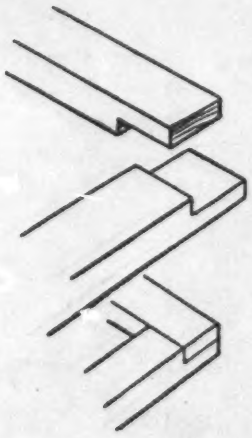

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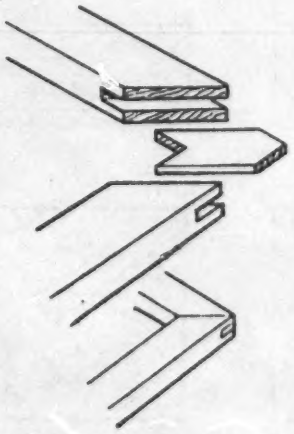

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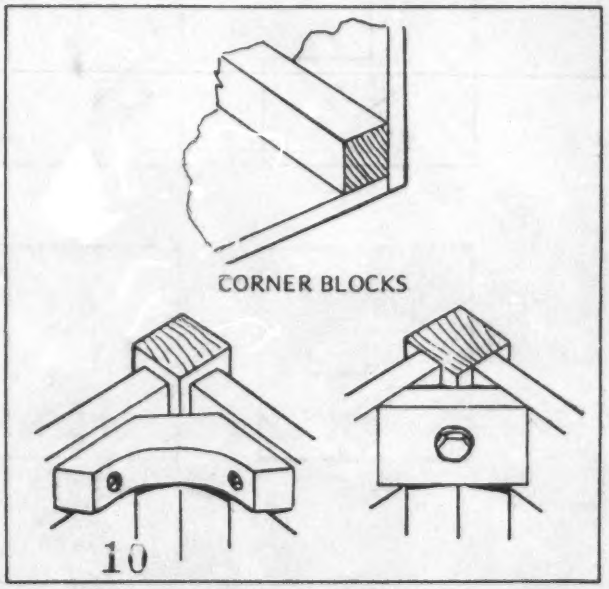


CORNER BLOCKS

Reprinted from Home Decoration and Furnishings

VOCABULARY OF WOOD

bird's eye

blister

burl

butt

cross-band

crotch

curly

figure

flitch

grain

heartwood

inlay

kiln-dry

laminated

marquetry

mottle

oyster

parquetry

plain sawed

plywood

quartered

rift sawed

rotary cut

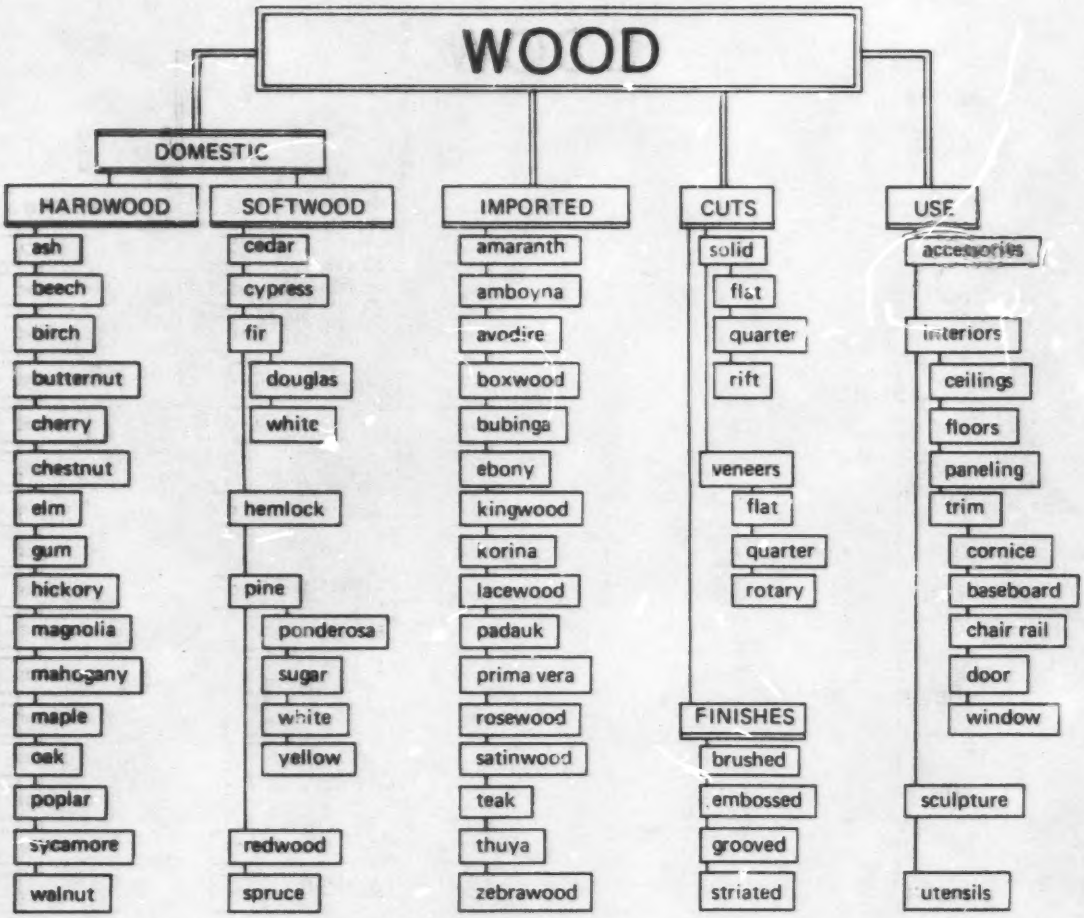
stripe

stump

swirl

texture

veneer



Wood is generally classified as softwood or hardwood, but these terms have no reference to the softness or hardness of the wood. Softwoods are cut from trees having needle-like or scalelike leaves, while hardwoods are cut from broad-leaf trees.

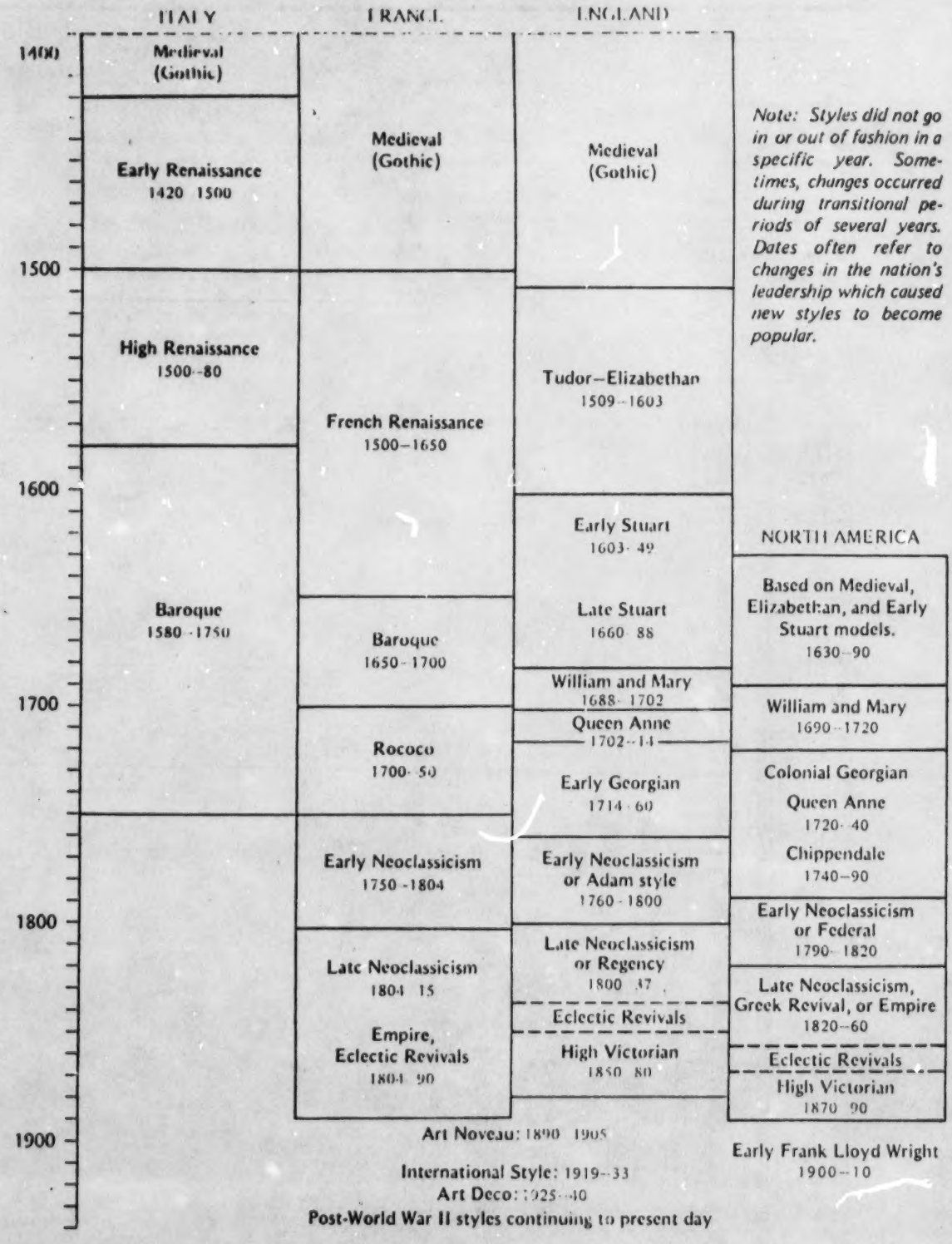
EXOTIC WOODS

NAME	GENUS	ORIGIN	COLOR	GRAIN	USE
Amaranth	Peltogyne	Central America	violet	striping	inlay
Violetwood		Brazil	purple		cabinet work
Purpleheart					
Amboyna	Pterospermum	Malay		burr	veneer
Lingoa		Borneo		curly	
		New Guinea		burr	
Avodire	Turraeanthus	West Africa	creamy	mottle	cabinets
Ayous	Triplochiton	Africa	brownish-yellow	open	cabinets
Obeche					
Bubinga	Didelotia	W. Africa	reddish	lines	cabinets
Ebony	Diospyros				
Macassar		E. Indies	gray, brown	stripes	inlay
Gaboon		Fr. Africa	black		turnery
Ceylon		E. Indies	black		
Gaboon	Aucoumea		reddish brown	textured	cabinets
Okume					
Goncalo Alves	Astronium	Mexico	reddish		furniture
		Brazil	dark brown		cabinets
Guanacaste	Enterolobium	Mexico	brown	figured	furniture
Jenisero			reddish	wavy	plywood
Genizero					
Kelobra					
Harewood	Acer	U.S.	white	fiddle-back	veneer
Sycamore					
Kingwood	Dalbergia	Brazil	dark brown	stripes	inlay
Koa	Acacia	Hawaiian Is.	golden brown	figured	cabinets
Lacewood	Cardwellia	Australia		figured	overlay
Selano				flaked	
Silky oak					
Laurel	Terminalia	E. India	red-brown	texture	furniture
Limba	Terminalia	Belgian Congo	blond		cabinets
Myrtle	Umbellularia	U.S.	yellow brown		furniture
Oriental	Endiandra	Australia	grayish	stripes	furniture
Padauk	Pterocarpus	Africa	golden red brown	swirly	cabinets
Vermillion		Philippines	brown-red		
Narra					
Prima Vera	Cybistax	Mexico	straw	figure	
		S. America			
Rosewood	Dalbergia	Asia	reddish brown	streaks	inlay
		C. America			
Santa Maria	Calophyllum	Honduras	dark red	texture	furniture
Sassafras	Sassafras	U.S.	light brown		furniture
Satinwood	Zanthoxylum	E. India	golden-yellow	wavy-figure	furniture
		Ceylon			inlay
Snakewood	Piratinera	Guiana	dark brown	spotted	inlay
Letterwood		S. America		mottled	
Tamo	Fraxinus	Japan	white	figured	veneer
Teak	Tectona	Burma, Java	yellow	straight	furniture
		India, Siam	brown		
Thuya	Callitris	Moracco	brown-red	burly	inlay
	Quadrivalvis	Algeria			veneer
Tulipwood	Dalbergia	Brazil	tan	striped	inlay
Zebrawood	Cynometra	W. Africa	light gold	streaked	veneer
Zebrano		W. Africa	reddish-brown		inlay
Zingana		Cameroons			

WOODS PHYSICAL PROPERTIES AND SOURCE CHART

No.	Species	Comparative Weights	Hardness	Compressive Strength	Stiffness	General Strength	Shock Resisting Ability	Bending Strength	Shrinkage	Source
1	Ash, tough white	Heavy	Hard	Med.	High	High	Med.	Med.	Med.	USA
2	Basswood	Light	Soft	Low	Med.	Low	Low	Low	High	USA
3	Beech	Heavy	Hard	Med.	High	High	Med.	Med.	High	USA
4	Birch	Heavy	Hard	Med.	High	High	High	Med.	High	USA
5	Butternut	Light	Soft	Low	Med.	Low	Low	Low	Low	USA
6	Cherry, Black	Med.	Hard	Med.	High	High	Med.	Low	Low	USA
7	Chestnut	Light	Med.		Low	Low	Med.	Low	Low	USA
8	Cottonwood	Light	Soft	Low	Med.	Low	Low	Low	Med.	USA
9	Ebony	Heavy	Hard	High	High	High	High	High	Not Rated	Asia
10	Elm, Northern	Med.	Med.	Low	Med.	Med.	Med.	Low	High	USA
11	Gum, sap	Med.	Med.	Low	Med.	Med.	Low	Low	High	USA
12	Hickory	Heavy	Hard	Med.	High	High	High	Med.	High	USA
13	Korina	Med.	Med.	Low	Low	Med.	Not Rated	Low	High	Africa
14	Mahogany, African	Med.	Med.	Med.	Med.	Med.	Low	Low	Low	Africa
15	Mahogany, Honduras	Med.	Med.	Med.	Med.	Med.	Low	Low	Low	Central America
16	Mahogany, Philippine	Med.	Med.	Med.	High	Med.	Med.	Med.	High	Philippine Islands
17	Maple, Hard	Heavy	Hard	Med.	High	High	Med.	Med.	High	USA
18	Oak, Red	Heavy	Hard	Med.	High	High	Med.	Med.	High	USA
19	Oak, White	Heavy	Hard	High	High	High	Med.	Med.	Not Rated	USA
20	Padauk	Med.	Hard	Low	Med.	High	Low	Low	Med.	Africa
21	Poplar, yellow	Med.	Soft	Low	Med.	Low	High	Low	Med.	USA
22	Rosewood, Brazilian	Heavy	Hard	Not Rated	Not Rated	High	Not Rated	Not Rated	Med.	S. America
23	Teak	Heavy	Hard	Med.	High	High	Low	Med.	High	Asia
24	Walnut, Black	Heavy	Hard	Med.	High	High	Med.	Med.	Med.	USA
25	Willow, Black	Light	Soft	Low	Low	Low	Low	Low	Med.	USA

CHRONOLOGY OF FURNITURE STYLES



Note: Styles did not go in or out of fashion in a specific year. Sometimes, changes occurred during transitional periods of several years. Dates often refer to changes in the nation's leadership which caused new styles to become popular.

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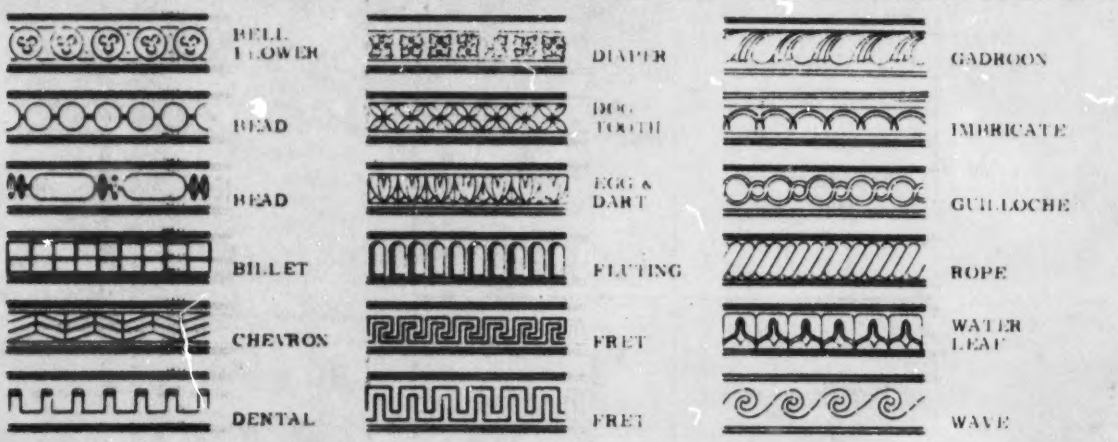
ORNAMENTS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BEAD
READ
BILLET
CHEVRON
DENTAL
DIAPER
DOG TOOTH
EGG & DART
FLUTING
FRET
FRET
GADROON
IMBRICATE
GUILLOCHE
ROPE
WATER LEAF
WAVE

ACANTHUS
ANTHEMION
LYRE
PALMETTE
METOPE
TREFOIL
QUATREFOIL
CINQUEFOIL
STAR
SHELL
MASCARON
FINIAL
PATERA
ROSETTE
DORIC
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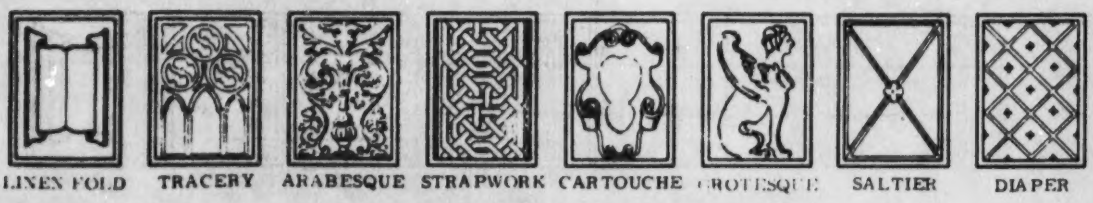
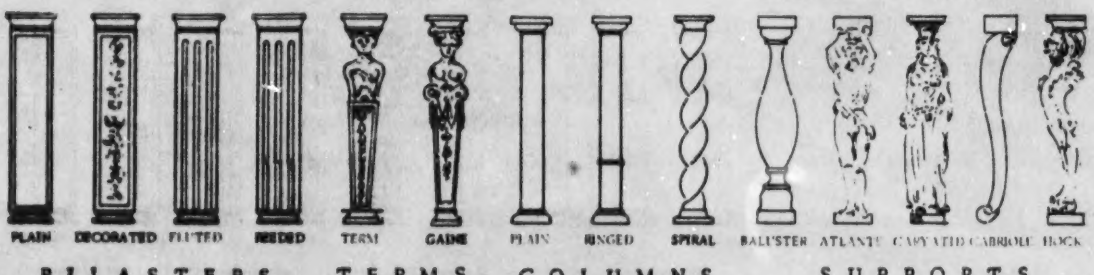

LINEN FOLD
TRACERY
ARABESQUE
STRAPWORK
CARTOUCHE
GROTESQUE
SALTIER
DIAPER

FLOWER
RIBBON
FRUIT
FESTOONS
BOSSES
CROCKET
LOZENGE
TRIANGULAR
BROKEN
SEGMENTAL
SWAN NECK


PLAIN
DECORATED
FLUTED
REEDED
TERM
GAINE
PLAIN
RINGED
SPIRAL
BALUSTER
ATLANTE
CARYATID
CABRIOLE
HOCK
PILASTERS
TERMS
COLUMNS
SUPPORTS

DICTIONARY OF TERMS

A

abrasive	Material used to wear away other material, smooth stock surfaces, or polish finishes.
adhesive	Substance used to bond materials together. A variety of natural and synthetic materials are made into cement, paste or glue.
alkyd resin	Synthetic material widely used as a vehicle in varnishes and enamels to increase durability.
alligatoring	Cracks formed in a finished surface resulting in a mottled pattern caused by unequal expansion and contraction of separate coats of finish.
aluminum oxide (Al_2O_3)	An efficient abrasive made by fusing bauxite ore in an electric furnace. It is used to make abrasive paper, cloth, and grinding wheels.
aniline dyes	Oily synthetic coloring agents produced chemically from coal tar. Used in coloring fabrics or wood as permanent stain.
arris	The sharp edge formed by the meeting of two surfaces.
attaching plate	A metal plate designed for fastening a leg to a seat or table with a hanger bolt.

B

banding	Strip of fabric often used around spring-edge and platform seats. The top edge is usually hand sewn to the edge wire and the bottom edge is fastened to the frame.
bleaching	Lightening effect in the color of wood produced by application of a chemical solution.
bleeding	The transfer of color from one finish coat to another. For example, varnish applied over an unsealed oil stain dissolves part of its color resulting in discoloration of the varnish coat.

blind — Work which is hidden or out of sight. Frequently used in stitching, tacking and doweling.

blushing — Whitish cast formed in a finish. Often occurs in clear spraying lacquer which dries too fast as it is applied. Particularly on humid days, water vapor in the air is condensed and trapped with the finish. Retarding thinner is usually added to lacquer mixture as a preventative.

boiled linseed oil — Certain metallic driers are added to raw linseed oil, then heat treated and aged for use in the manufacture of varnish and enamel.

borax — Used on wood as a second coat water solution to neutralize oxalic acid bleach. Helps prevent pink shades on maple or oak.

burlap — Coarse cloth, usually woven with jute or hemp fibers. It is used over springs in upholstery.

burn in — Process of repairing damaged finished furniture. Stick shellac, in colors to match finished surface, is melted into damaged area, then polished.

buttoning — Use of covered buttons to hold final covering in place and produce a low relief decorative effect.

C

cambric — Generally black or white sized cotton fabric used as dust cover on bottom of upholstered furniture. It also prevents particles of padding from falling to the floor.

catalyst — Substance which starts and aids in the control of a chemical action.

chamfer — Sloped edge formed by cutting at a slanted angle across one arris of a square edge.

channeling — Tubes or channels are sewn, usually straight up and down in fabric. These are filled with stuffing materials and sewn shut, resulting in rounded ridges with depressions between them.

coil springs — Coils formed by spirals of wire which supply the major resiliency in upholstered furniture.

colonial furniture	The kind of furniture first made and used in the American colonies.
compatibility	Term used in finishing to denote ability of mediums to mix together harmoniously.
contact cement	Cement which, when properly used, bonds two surfaces or edges together upon contact.
contemporary furniture (also Modern)	Modern day furniture made with characteristic smooth, trim lines and simple construction.
cotton mat (felt)	Combed cotton formed into a soft, flexible mat. It is used over rubberized hair and other upholstery materials to produce a cushioning effect.
crystalline finish	A novelty finish similar to enamel or paint which, upon drying, forms a mass of wrinkles or crystals.
cushion springs	Springs made especially for comfort and strength in seating.

D

dacron polyester fiberfill	Soft, resilient padding made with plastic materials and used over other padding as a substitute for cotton mat.
decking	Fabric used as substitute for expensive covering under cushions or other platforms hidden from view. Denim is generally used.
denatured alcohol	Combination of wood and grain alcohol.
denim	Strong, twilled cotton fabric of excellent wearing quality. Sometimes used as decking under loose cushions.
design	Plan or scheme in which ideas and thinking are incorporated as direction for creating with materials and tools.
dowel	Cylinder of wood, usually birch, manufactured in a variety of diameters by a standard length of 36 inches. It is often used to strengthen joints.

dowel peg	A short dowel made especially for wood joints.
dowel point	Metal cylinder with a flange and a sharp center point. It is used to mark the location of a mating hole for a dowel joint.
down	Soft, under feathers of ducks and geese.
drier	Catalyst added to finishing material to speed curing and drying time.
drying	Process causing finish to harden by evaporation of solvents or by chemical (oxidation) action.
dull finish	Finish without gloss obtained by rubbing or by chemical action of flattening agents.
durability	Ability to resist and withstand use, abrasion, weather, or other stresses.
dust cover	See cambric.

E

early American furniture	The type of furniture made and used as industry developed during the period of the American Revolution.
earth pigments	Coloring matter mined from the earth such as ochre, sienna and umber.
edge roll	Fabric tube filled with fibrous padding materials to roughly round or triangular cross sections. It is used to soften frame, platform and spring edges. It is sometimes made by hand but is available ready-made. Ready-made edge roll is often paper core with burlap covering.
edge wire	Heavy gage (generally 8 or 9 ga.) wire, especially made for spring edges.
edge wire clips	Clips stamped from strip steel used to fasten edge wire to springs.
emulsion	Suspension of tiny particles of water in oil, or oil in water, with the aid of an emulsifier.
emulsion paint	An oil, resin, varnish or lacquer which is emulsified so that it can be mixed with water.

enamel	Finishing material creating a hard, durable waterproof finish. It is made by adding pigments to varnish to give it color and opacity.
excelsior	Shredded wood made of basswood or poplar and sometimes used as foundation padding in less expensive furniture.
exposed wood (show wood)	Furniture parts which are finished and intentionally left exposed during upholstery processes.
extender	Material used as a filler in paint or glue to provide body and increase coverage.

F

feathering	Lightly brushing thin coat of finish, using only tips of bristles, to yield a blending action.
fiber mat	Processed fibers of the sisal plant formed into a mat for padding.
filler	Material used to repair defects in wood. Examples are plastic wood, wood putty, water putty and stick shellac.
flattening agent	Substance used in paints, varnish and lacquers to reduce gloss in finish and give it a rubbed appearance.
flow (finishing)	Quality of a material to spread or move evenly into a uniform and level coating.
fluting	Concave (inside curve) band formed in an edge, cylinder, molding or surface.
foam cement	Specially made adhesive to stick foam cushion padding to seat material.
foam plastic	Soft, cushioning material used as padding in upholstery. It is produced from polyurethane plastic.
foam rubber	Soft, cellular and highly resilient material providing cushioning effect useful in upholstery. It is produced from rubber latex.

French polish — This term refers to a type of glossy surface produced as a result of using certain finishing materials. The ingredients include white shellac, boiled linseed oil, and denatured alcohol.

French provincial furniture — The kind built and used during the reigns of Louis XIV to XVI. It has simple, curved lines and is devoid of ornate carvings and gildings.

furniture nails — Decorative nails made of brass or steel used to attach gimp or outer covering to furniture.

G

gather — Forming folds in fabric by drawing it along a thread or drawstring.

gage — Diameter or thickness of material such as wire used in springs and sheet metal used for fastening plates.

gimp — Thin, narrow, decorative material used to cover tacks or staples around edges of covering material.

gimp tacks — Tacks with small, round heads used to fasten cloth gimp or tack covering invisibly around exposed portions of furniture frames.

glide — Metal or plastic fastener with large, smooth surface used on bottom of furniture feet as an aid in moving furniture about.

gloss — Finished surface with high luster and good light reflecting qualities.

glue blocks — Small pieces of wood attached with glue or metal fasteners to strengthen joints.

glue injection — Method of tightening loose joint. Drill small hole, about 3/32 in. diameter into loose joint. Force liquid glue through hole into joint with glue syringe. Tighten joint with clamps.

H

hair — Curled hair from hogs, cattle or horses used as stuffing.

hand rub	Using cloth pad or felt with rottenstone or pumice and oil to smooth top coat finish by hand.
hanger bolt	Threaded fastener used to attach leg to table with an attaching plate.
harmony	Design term implying that characteristics of parts in an object are in conformity or agreement.
helical spring	Short, lightweight coil springs with a hook at either end often used to anchor sinuous springs to furniture frames.
hinge	Piece of hardware used to fit parts together so that one can swing free of another as a door or window.
hog ring	Upholstery fastener resembling hog ring. It is used to install burlap, seat covers and other upholstery materials.
holiday	Spot or place missed during finish application.

I

innerspring	Coil springs individually sewn in muslin or burlap pockets and fastened together in strips or ready-made units. These are used in furniture seats, backs, cushions, arms and mattresses. Also called Marshall unit.
inspection	Method of quality control. Skilled workers carefully inspect products during all upholstering processes to assure quality control of materials and work.
interchangeability	Parts or devices made to dimensions of close tolerances, often by mass production, which will fit into more than one assembly.

J

jute	Plant from which processed fibers are made into burlap and webbing. Plant grows in India.

K

kapok (silk floss) — Silky fibers grown in seed pods of a tree called "ceiba pentandra." The tree grows best in Java. Kapok is excellent padding for pillows.

L

lac — Natural resin used to make shellac. It is exuded from an Indian insect which lives on sap from certain trees.

lacquer — Hard, durable finishing material made of nitrocellulose. Drying occurs by evaporation of its solvents.

lag screw — Heavy, round shanked wood screw with a square head.

laminate — Product made by bonding thin layers (plies or laminations) of material together with an adhesive.

leather — Made from hides and skins of domestic animals. It is used for final covering on truly fine upholstery.

leveling (finishing) — Formation of a smooth film, free of brush marks, on a finished surface.

linseed oil — Valuable vegetable oil obtained by processing flax seeds. This oil, in its boiled form, is used alone as an excellent finish. It is also extensively used in oil base paints and finishes.

low profile springs — Springs which provide spring action slightly above or even with rail level. Sinuous, rubber webbing, and strap and helical springs are examples.

M

Marshall unit — See innerspring.

mass production — Production of parts or products in quantity, often for wide distribution.

material — Supplies needed such as webbing, burlap, springs and nails, to construct a part or product.

mesh — Openings formed by crossing or weaving a series of parallel threads or wires as in a sieve.

metalene nails — Decorative nails, generally made of steel, often used to install vinyl gimp trim.

mineral spirits — Petroleum distillate used as a solvent in oil base paint and varnish as a substitute for turpentine.

modern furniture — See contemporary furniture.

moss — A padding material sometimes called Spanish Moss, refined from an air plant which lodges on trees in southern United States, particularly Louisiana and Florida.

muslin — Lightweight cotton cloth sometimes used as first covering over padding materials.

N

naphtha — Volatile petroleum solvent used as a thinner to reduce enamel, oil-base paint and varnish.

natural resins — Gums and resins, used in finishes, which are obtained from trees or from fossilized vegetable matter.

O

oil stain — Stain having an oil base. It is of two classifications, penetrating or pigmented.

orange peel (finishing) — Spraying defect resembling the texture of an orange peel caused by improper mixture or application of finish.

oxidize (finishing) — Chemical reaction caused by materials uniting with oxygen. This is part of the curing and drying process of such finishes as varnish, enamel, and oil-base paint.

P

padding	Soft, resilient materials installed over springs or used as foundation for an upholstering piece.
paint	Common term referring to all protective coatings. More specifically, it is a mixture containing pigment and vehicle which can be spread in a thin film on surface.
panel	Preupholstered section of covering material used to cover exposed tacks, folds or frame, as on the front of overstuffed arms.
paste wood filler	Material used to fill open grained wood in preparation for other finish. It consists of ground silicon (silex), linseed oil, thinner, drier, and coloring.
pictorial sketch	A method of sketching resulting in a view of an object which appears approximately as it would by eye.
pigment	Powdered substances which provide color and body for finishing materials.
pillow springs	Light gage wire springs made for arms and backs of furniture.
pintacking	See slip tack.
plan of procedure	Necessary operations, listed in a logical sequence for making a product.
plastic coating	Application of certain synthetic finishes such as polyurethane varnish.
plastic wood	Manufactured, doughlike material used to repair cracks, holes and defects in wood.
plywood	Manufactured product made with cross-banded layers (plies) of veneer or solid center stock bonded together with glue. An odd number (3, 5, 7, etc.) of plies is used.
pneumatic	Related to, or operated with air pressure.

pretacked strips	Tacking strips with tacks inserted 1 or 1 1/2 in. apart. Heads of tacks are covered with hardboard or steel strip. It is used for blind tacking leather or vinyl covering instead of blind stitching as with cloth fabric.
process	Planned operation performed in the development or fabrication of a problem or product.
proportion	The ratio of the dimensions of a piece.
pull	Device used as a handle to open a drawer or door.
pumice	An organic substance made by pulverizing lava rock. It is used as a fine abrasive to smooth the final coat of certain finishes.

Q

quality control	Inspection and supervision of material and work quality during all upholstering processes to strive for excellence in finished products.
quilting	Decorative stitching around designs or prints through cover fabric with thin layer of padding and muslin backing.

R

reduce (finishing)	To lower the viscosity (thickness) of a finishing material with a thinner or solvent.
regulator	Needle-like tool used to pierce through muslin cover and move stuffing materials beneath to lessen irregularities.
remover	Solvent for dissolving old paint or other finish film so that it can be removed from wood or metal surfaces.
resilience	Capability of a material placed under stress to return to its original shape.
retarder (finishing)	Substance added to a finishing material to prolong its curing and drying time.

return tie	Short end of spring twine that is tacked to frame and is returned and tied to top edge of spring next to frame.
ripping tool	Chisel-like tool used to strip upholstery materials from furniture frames.
rottenstone	Fine rubbing and polishing compound made with decomposed siliceous limestone. It is used to smooth the final coat of certain finishes.
rub	See hand rub.
rubber cement	An adhesive especially adaptable to porous materials. It remains flexible, yet holds parts firmly together.
rubberized hair pad	Curled, refined hog and other animal hair which is formed into rubberized sheet padding.
rubbing oil	Mineral oil especially prepared for rubbing top coat finish with pumice or rottenstone.
runs (finishing)	Abnormal flow of finishing material usually caused by excess application.

S

safety first	Slogan often used around an industrial plant, construction site, or school laboratory. It implies that safety is of utmost importance in considering any task.
sealer (finishing)	Finishing material used to seal the pores of close grain wood. It is also used over stain or filler to prevent bleeding.
sealer stain	Finishing material which combines a sealer and stain together.
set (finishing)	Initial hardening of finishing material prior to drying to complete hardness.
sheen	Luster of a rubbed, finished surface.
shellac	Natural finishing material made by dissolving refined lac in denatured alcohol.

show wood	See exposed wood.
silencer	Strip of webbing, cloth or padding material used to help prevent noise in springs from rubbing against frame.
silicon carbide (SiC)	Synthetic compound (bluish black in color) made by fusing coke and silica at high temperatures. It is an extremely hard material used on tools where sharp, durable, cutting edges are needed. It is also crushed and used for abrasive paper and grinding wheels.
silex	Hard stone (flint or quartz) which, when finely ground, is used in paints and paste wood filler.
sinuous springs	Wire springs which alternately curve one way and then the other in a winding or zig zag fashion.
sisal padding	See fiber mat.
skewer	Short wire tool with sharp point on one end and round loop on the other end. It is used to temporarily hold materials in position prior to sewing, tacking or stapling.
skiving	Thinning leather edges at an angle to form a taper in preparation for attaching.
slip seat	Upholstery seat constructed for easy removal from its frame.
slip tack	Tack driven partway into a surface to provide temporary fastening.
solid base	Upholstery base constructed with flat surface of wood or plywood.
solids (finishing)	Material remaining in a paint after its liquids have evaporated. Solids are usually given by percentage of weight in a paint.
Spanish moss	See moss.
spirit stain	An aniline dye mixed with denatured alcohol to color wood.

splat	Wide, flat, vertical section used in the center of a chair back.
splayed	Pertains to the leg of a chair or table which angles outward in two directions from its seat or top.
spray gun (finishing)	Device which atomizes (forms a fine mist) finishing material so that it can be applied by spraying in thin, uniform coats.
spring	Device made in several types, generally of steel wire, which is designed to render resilient support in upholstery seats, cushions, backs or arms.
spring bar	Coil springs mounted on a steel bar support.
spring edge	Heavy wire, usually 8 - 9 gage, fastened to top edges of coil springs with metal clips or twine lashing to provide uniform action and support.
spring and roll edging	See edge roll.
spring twine	Twine, generally made of jute, especially made to hold springs in position.
stain	Compounds of several types and a variety of colors, used to color material surfaces prior to application of other finishes.
staple	"U" shaped fastener, driven with a stapler, used to install upholstery or a variety of other materials.
steel wool	An abrasive material made in several grade sizes of thin shavings or shreds of steel. It is packaged in pads and rolls.
stick shellac	Shellac in stick form used to fill imperfections in wood surfaces around knots and other defects. It is available in a variety of colors.
stretcher	Inexpensive fabric attached to expensive covering material to provide a fastening extension which is hidden in completed product.
stripping	Term referring to: (1) removing used fabric or other materials from furniture frame prior to reupholstering or (2) removing unwanted finishing material from wood surfaces and edges prior to refinishing.

stuffing iron	Tool used to force loose stuffing material into corners and crevices which cannot be reached by hand.
synthetic	Manufactured material made by combining or as a by-product of other materials.

T

T cushion	Seat or back cushion shaped like a capital T. Usually found on seats of furniture where arms are shorter than seat section.
T-pin	Short wire tool with sharp point on one end and T shape on other end. It is used as a small skewer.
tack rails	Parts of the wood upholstery frame whose purpose is to support upholstery fabrics. Stretched materials are tacked or stapled to them.
tape	Cloth or flexible steel rule used to measure and lay out upholstery materials.
tapestry	A fabric in which the pattern is woven with colored weft threads. Only heavier weights are used as upholstery coverings.
tempera colors	Finishing medium which is mixed with water for application. Pigments or colors are usually mixed with an albuminous vehicle.
template	Piece of cardboard, metal, hardboard, or other material used as a guide to cutting, transfer of pattern, or checking accuracy of work.
tensile strength	Resistance of a material to longitudinal (pulling) stress.
thinner	Liquid for reducing viscosity (thickness) of a finishing material.
top coat (finishing)	Finish used over base or sealer coat.
touch-up (finishing)	Repairing of color defects in finish by blending in shades of new finish with light coats.

tow	Fiber of the flax plant. Packs easily making firm foundation padding. Less resilient than most padding material.
traditional furniture	Furniture created in Europe, particularly during the 18th and 19th centuries. It is named for the rulers who ordered it built or for the craftspeople who originated it. Typical decorations include gilt, fretwork, carvings, claw and ball feet and extravagent fabrics.
trestle	Equipment used to support frames at working height during upholstery processing.
triacetate	Synthetic fibers made by breaking down cellulosic materials (such as wood) with acids.
trial assembly	Dry (without glue) assembly of parts to check accuracy and function before final (bonding) assembly.
tufting	Use of covered buttons in pattern formation, pulled tightly to hold cover and stuffing in position. The surface is decorated with raised areas (tufts) and well defined, pleated lines.
tung oil	Drying oil (also called Chinawood oil) used in water resistent paints and varnishes. Also used as finish by itself similar to linseed oil and turpentine. It is obtained from the nut of the Tung tree.
turpentine	Volatile solvent used to reduce varnish, enamel and oil base paints. It is manufactured by distilling gum obtained from certain pine trees.
tweed	A heavy fabric of mixed color in plain, twill or herringbone weave.
twill	Type of weave having a characteristic diagonal ribbed pattern.
twine	Heavy cord used for various purposes in upholstery. Spring twine is used for tying down heavy upholstery springs. Jute twine is designed for tying down lighter springs. Flax (stitching) twine is used for sewing springs to webbing, fastening buttons and for all kinds of hand sewing.

U

upholstery pin — See skewer.

upholsterers' tacks — Made of steel with flat heads and used to hold upholstery materials to frames.

upholstery covered buttons — Used as decoration and to hold final covering and padding materials in position.

V

varnish — Durable, water resistant finishing material composed of copal gums or synthetic resins, a vehicle, usually linseed oil or tung oil, and a thinner, often turpentine.

varnish stain — Generally an interior varnish with pigments added so that both stain and varnish are applied at once. This kind of finish is usually used for coating economically priced furniture.

vehicle — The carrying agent (liquid) of a finishing medium.

velour — Soft, tightly woven, smooth fabric with a short, thick pile. Usually made of cotton, wool or mohair.

velvet — Pile woven fabric in which the pile is short and thick. Usually made of silk or synthetic fiber pile with a cotton back.

velveteen — An imitation velvet made with cotton fibers. May be woven in colors and patterns.

veneer — Thin sheet of wood, often laminated to core stock to make plywood or paneling. It is cut, sliced, or sawed from a log, cant, or flitch. When united in plywood it is sometimes referred to as a ply.

venting — Providing for free passage of air through upholstered furniture.

vinegar — An effective spot remover for upholstery fabrics. It should be used in a 10 percent solution with water.

vinyl coverings — Nonwoven fabrics manufactured from plastic usually attached to a knitted backing cloth.

W

wadding	Thin layer of cotton between soft paper used in the same way as cotton mat.
warp	The threads which run lengthwise and parallel to finished (selvage) edge of woven yard material.
wash coating	An extremely thin coating of sealer, usually shellac or lacquer sealer, applied over stain or paste wood filler to prevent bleeding of stain into successive coats of finish.
water putty	Dry powder which is mixed with water and used to stain wood and other materials.
water stain	Colored pigments which are soluble in water, and are used to stain wood and other materials.
water white	Clear, transparent as water. A term used to describe an exceptionally clear finishing material.
webbing	Used to support padding materials or springs. Jute webbing, a closely woven strap or tape, is made with jute fibers. Other webbing is made of rubber, plastic, wood and steel.
webbing pliers	Tool with wide jaws used to grip and stretch out webbing, leather and other materials.
webbing stretcher	Tool used to stretch webbing taut for fastening to furniture frames.
webbing tacks	Special tacks for fastening webbing to furniture frames.
weft	The threads carried by the weaving shuttle and running at right angles to the warp threads and selvage.
welt	Cord filled fabric strip often sewn along seams in final covering to improve appearance and increase durability.
welt cording	Light cord, usually 3/32 in. or 1/4 in. diameter, sewed inside fabric to make welting (piping). Cording can be made of paper or of textile fibers.
wood bending	Forming wood by twisting or curving.

wood stain	Any of the several agents used to color wood.
woof	See weft.
wool	Protein-base fiber obtained from sheep. Once used extensively in manufacture of upholstery fabrics, now largely replaced by synthetic fibers.
working drawing	An orthographic drawing, drawn to scale, usually with two or more views.

Z

zefran	Trade name for an acrylic fabric, moderately expensive, which is often used as upholstery material. It has the texture of wool and feels soft and warm to the touch.
zig zag	See sinuous.

Adapted from Upholstery Methods by Zimmerman. Published by Goodheart-Wilcox.

UPHOLSTERY MATERIALS AND SUPPLIES

1. Essential upholstery materials and supplies.

   A. Dowels, pegs, and glue blocks.

   B. Metal Components, strapping, braces, plates, hanger bolts, and glides.

   C. Adhesives.

      1) rubber cement
      2) foam cement
      3) contact cement
      4) plastics cement
      5) aliphatic cement
      6) white liquid resin glue
      7) animal glue
      8) plastic resin glue
      9) resorcinal resin glue
      10) casein glue
      11) screws

   D. Upholstery fabric materials.

      1) webbing
      2) burlap
      3) muslin
      4) denim
      5) cambric

   E. Upholstery fasteners.

      1) tacks - #1 - #24
      2) gimp tacks
      3) metalene nails
      4) furniture nails
         a. decorative
         b. attaching gimp
         c. attaching coverings
      5) staples
      6) sinvous (No-sag on zig-zag) nails
      7) buttons
         a. clasp
         b. eyelet and string
         c. nail
      8) glue gun (electric) attach double welting, gimp, fringe, panels, dowel joints, corner cleats

   F. Spring and related parts.

      1) coil springs
         a. hog rings
         b. edge -wire clip

2) Marshall units

3) Sinuous Spring (zig-zag)
   a. helical springs (tension springs)
   b. sinuous spring clips
   c. metal connecting links
4) torsion corner springs
   a. support edge wire on "T" shaped frames

G. Paddings.

1) sisal on fiber mat
   a. platform
   b. arms
   c. backs
2) white wadding (cotton)
3) rubberized curled hair
   a. foundation padding
   b. padding over springs
4) foam rubber
5) foam plastic
6) cotton mat
7) dacron - polyester
8) moss (spanish moss)
9) kapok

H. Twine and Thread

1) spring twine - waxed or polished
   a. fasten seat and back springs for position
2) stitching twine - flax or linen-waxed
   a. stitch springs to webbing
   b. burlap to springs
   c. padding to burlap
3) tufting twine
   a. attach buttons
4) sewing thread - cotton and nylon
   a. sew welt strips (cording)
   b. cushion seams
   c. corner folds
   d. upholstered backs

I. Edging materials and trim.

1) spring or edge roll - fasten to frames for smooth edges along springs, seats, and arms.
2) blind tacking strip - blind tack outside arms, sides, and back
3) gimp - fabric on plastic
4) welt cord - covered for decorative seams

II. Essential Upholstery Tools and Equipment

A. Webbing stretcher
   1) for fabric webbing
   2) for metal webbing

B. Stretching pliers - fabric webbing

C. Hog ring pliers - fasten clips burlap over springs, etc.

D. Spring clip pliers - close 3 prong clips on springs.

D. Ripping Tools.

1) ripping chisel - remove old coverings
2) staple lifter
3) claw tool - tack puller

F. Hammers

1) nylon tip - furniture nails
2) magnetic - tack hammer
3) magnetic split end - tack into deep corners
4) mallet - rawhide, wood, or rubber
for striking handles or tools - dismanteling frames

G. Upholsterers shears

1) general heavy duty
2) trimmers snips
3) thread clip

H. Measuring and layout tools

1) cloth measuring tape - curved surfaces
2) metal straight edge - mark straight cutting lines

I Upholstery needles - stuffing tools - pins.

1) straight needles - 4 to 20 inches
2) double pointed
3) curved
4) button tufter
5) stuffing regulator - adjust padding
6) stuffing iron - hard to reach corners

J. Upholstery pins

1) upholsterers pin or skewer - hold materials for blind stitching
2) "T" pin

K. Staplers

L. Bolt cutter

M. Clamping devices

1) hand screw
2) "C" clamp - smaller tasks
3) spring clamps - irregularly shaped work

4) steel bar clamp - assemblies
5) band clamps - round or irregularly shaped pieces

N. Working surfaces and supports.

1) trestles (saw horses) pad top.
2) cutting table (6 foot wide)

O. Heavy duty machine - stand etc.

P. Cushion stuffer or filler.

1) hand sets (24" - 36" 48")
2) foot operated

Q. Button covering machine.

R. Bench Vice.

UPHOLSTERY TOOLS AND SUPPLIES

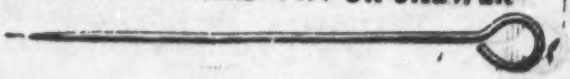
UPHOLSTERERS' NEEDLES

No. 922 Heavy
Curved, 3-Square Point △

No. 910 - DOUBLE ROUND POINT ○

No. 900 - SINGLE 3 SQUARE POINT △

UPHOLSTERERS' PIN OR SKEWER



"T" PINS

The pin of a thousand uses.

Size	28	24	20

REGULATORS

Length, inches	6	8	10
926 - Light, Each	$ 1.20	$ 1.60	$ 2.20

CLAUSS SHEARS

WITH SPECIAL BOLT & NUT
POLISHED BLADES

Stock No.	Full Length	Length of Cut	Wt. Lbs. 6 Pack	List Each

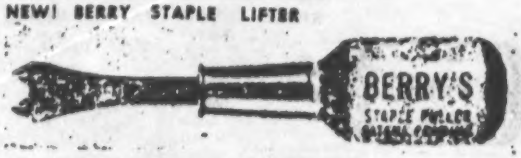
#150 Supremagnet — 7 oz. head.
Mag. face 5/16" — non-mag. face

TACK CLAWS

No. 120

#120 Tack Lifter — Rugged, with fine points for getting under either tacks or fancy nails. Nicely shaped wooden handle.

NEW! BERRY STAPLE LIFTER



A top quality tool of heat-treated alloyed steel.
This one tool removes staples of all sizes with a simple twist of the wrist.
How it Works — Slip either blade under staple and pry it partly up. Quickly twist handle to right, pulling staple completely free.

RIPPING TOOL

No. 50

#50 Ripping Chisel — plastic handle, giving much longer service.

WEBBING STRETCHER

No. 8

Old Style Webbing Stretcher — rock maple wood with extremely hard polished steel pins.

SATEEN UPHOLSTERERS' TAPE

No. 492
(x) inches long

41

UPHOLSTERY SPRINGS
WIDE CENTERS

No.	Height	Per Lb.	50 Lbs. Per Lb.
1	6"	[illegible]	[illegible]
2	8"	[illegible]	[illegible]
3	10"	[illegible]	[illegible]
4	11"	[illegible]	[illegible]

PILLOW SPRINGS, KNOTTED

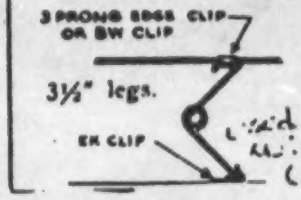
13 Gauge — 25 Lb. Bundles

Height, inches	6	8
Per Lb.	$1.30	$1.30
25 Lb. Bundles	Per Lb.	$1.10

SEAT SPRINGS Knotted one end.

For Trucks, Cars, Etc.	Height, inches	4	6
	Gauge of wire	10	10

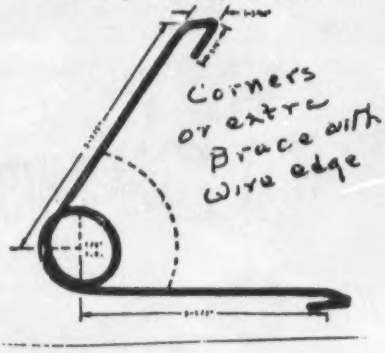
TORSION CORNER SPRINGS



Ideal for use in supporting edge wire on T shaped frames. 6½ inch.

STANDARD TORSION SPRINGS

(3¾" legs) 1,000 per Carton

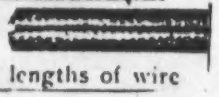


SPRING EDGE WIRE AND TUBES

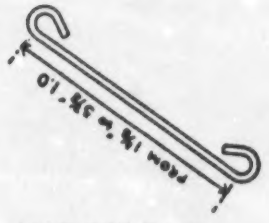
9 Gauge

No. 9—Straight Bars, 12 ft. ..... 100 Lb. Lots .....

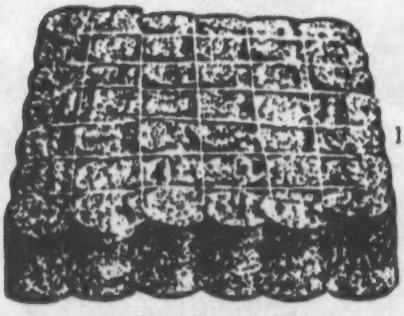
BORDER WIRE TUBES
No. 9 Size 2½"



Tubes, useful in joining short lengths of wire



CONNECTING LINKS



CUSHION SPRINGS

15 gauge wire.

Marshall Type
Muslin Covering

All Hand Tied—3 In. Diameter
3½ In. High

18" x 18" (6 x 6)	....
18" x 21" (6 x 7)	....
21" x 21" (7 x 7)	....

Hog Ring—3" Diameter
3½ In. High

18" x 18" (6 x 6)	....
18" x 21" (6 x 7)	....
18" x 30" (6 x 10)	....
21" x 21" (7 x 7)	....
21" x 30" (7 x 10)	....

FURNITURE FABRICS.

Furniture fabrics include both slipcover and upholstery materials. In general the difference is that slipcovers are made of lightweight or medium weight fabrics and are removable; upholstery fabric is heavier and is permanently attached.

The most important factor in determining the durability of furniture fabrics is the tightness of the weave. This can be determined by closely examining the fabric and by holding it up to the light.

The most satisfactory upholstery fabric would be a heavy, stable fabric with a tight flat weave made from a strong fiber. It would be soil resistant and would not wear, snag, stretch, shrink, sag, or fade. All of these qualities probably will not be found in one fabric; however, they should be used as a guide in making the final decision. Different uses will demand different priorities for these qualitiies.

Slipcover fabrics should have the same characteristics as upholstery fabrics with the exception of weight. Slipcovers are usually made of medium weight material for ease of handling.

Cording used in seams of slipcovers and upholstery is usually the first place to show wear. If the fabric chosen is not especially durable, longer use of the covering may be obtained by omitting the cording. Plain seams give a neat and attractive appearance.

FIBER

Nylons, polyester, and olefins are strong fibers for furniture fabrics, but many cottons, acetates and the new modified rayons in the proper fabric construction may give equally satisfactory service. The nylons, polyester, and olefins are all easily cleaned, but melt easily, creating a problem with careless smokers. Olefins are naturally spot and stain resistant. Rayon fibers are much improved in recent years, and the modified rayons are stronger and more stable than regular rayons. Linen used alone is too brittle to give long wear for furniture covers. Check a fiber chart for trade names and comparative characteristics of all the fibers.

FABRIC STRUCTURE

Furniture fabrics may be woven by one of several methods or may be knitted. Each type of fabric differs in characteristics and in appearance.

WOVEN

Examine woven fabric for closeness of weave and for length of yarns on the surface of the fabric. A firm, closely woven fabric should wear better than a loosely woven fabric with long loose yarns than can be snagged easily. Check the closeness of weave by holding the fabric up to the light. Some loosely woven fabrics made of heavy yarn may have a high aesthetic appeal but would not be as durable as other fabrics. An applied backing will give greater stability to loosely woven fabric. Fabrics with raised designs are more difficult to clean and care for than the smoother fabrics.

The weaves most commonly used for upholstery fabrics:

PLAIN WEAVES - Made of interlacing two sets of yarns, one alternating over and under the other. Basketweave, homespun, monks cloth, and some tweeds are examples of this basic weave and its variations.

PILE FABRICS - Made with cut or uncut loops of yarns that stand up on the surface. Height of pile may vary. Examples are velvet, velveteen, and plush.

TWILLS - A basic weave that creates a diagonal line or rib on the surface of the fabric. Diagonal may be set at sharp or blunt angles.

JACQUARDS - Yarns are interlaced in an intricate manner to produce elaborate designs. Examples are brocade, with a embossed appearance; brocatelle, with high relief designs; damask that is reversible with different colors on the reverse side; matelasse with a raised or quilted effect; and tapestry, a heavy fabric with designs depicting current or historical scenes.

KNITTED

All types of knits are relatively new for upholstery fabric. These fabrics offer better fit and can be produced with less labor and therefore at lower cost. They may stretch and snag if given rought treatment. Some knits are laminated to a foam backing for greater stability.

OTHER FURNITURE COVERINGS.

In addition to fabric upholstery, many pieces of furniture are covered with other materials such as leather, vinyl, and the new urethane-coated fabrics.

LEATHER

Leather is a luxurious and expensive furniture covering. It is soft and pliable, very durabel, resistant to abrasion, and easy to care for. A finish is usully applied for resistance to alcohol, to perspiration and other stains, and to cracking. Be sure to follow the care instructions on the label. Leather is available in a variety of colors and textures.

VINYL

The most important characteristic is easy care. It can be easily dusted and washed witha solution of mild soap or detergent. Strong, harsh, cleaning agents should not be used because they will cause stiffening and cracking.

Good quality vinyls are durable and resistant to abrasion, but they may show scratches.

The durability of vinyls is mainly determined by the type of backing. Unsupported vinyls have no backing and therefore and susceptible to puncturing and tearing. Supported vinyls have a knit backing giving them added strength. Expanded vinyls have a layer of foam between the face and the fabric back giving them softness as well as strength. These stronger vinyls are recommended for furniture covereing.

Vinyls are available in a wide variety of attractive colors, patterns and textures. Some are flame resistant.

THe major disadvantages of vinyls is their discomfort. They are hot in summer and cold in winter.

URETHANT-COATED FABRICS

These are so new on the market that they cannot at this time be properly evaluated. They are said to be very soft, pliable, and also breathable, making them more comfortable for use than the vinyls. Urethane is applied to a fabric backing in such a manner as to form many minute perforations in the urethane, permitting the fabric to "breathe".

SPECIAL FINISHES

Spot and stain-resistant finishes are applied to most upholstery fabrics. Some finishes resist only water stains, some resist both water and oil stains, and some also resist dry soil. These finishes in no way affect the wear of the fabric.

FAbrics with these finishes should be given the same care as other upholstery fabrics. If spots are not moved immediately, they may be more stubborn than if no finish had been applied.

BACKING

Many upholstery fabrics have an applied backing of acrylic, rubber or a thin layer of foam. These give added stability to the fabric and are especially advantageious on loosely woven fabrics. Olefin fabrics often have an applied backing to avoid yarn slippage. This backing may be given a soil-resistant finish to protect the padding from stains because olefin yarns have a wicking ability than permits liquids to flow through the fabric.

PRICE VS. DURABILTY

Upholstery fabrics come in a wide range of both price and quality; however, the two are not necessarily related. Some fabrics with intricate and unusual design or special weaves are more expensive to manufacture than other fabrics. These fabrics may be more aesthetically appealing but not necessarily more durable. Each manufacturer has his own grading system based on price, not on durability of the fabric. The consumer therefore must learn to be his own judge of durabilty by comparing fabric weight, fiber, construction, backing and finish.

Reprinted from "Furniture and Window Fabrics" by Regina Rector, An Extension publication of the New York State College of Human Ecology, Cornell, Univ.

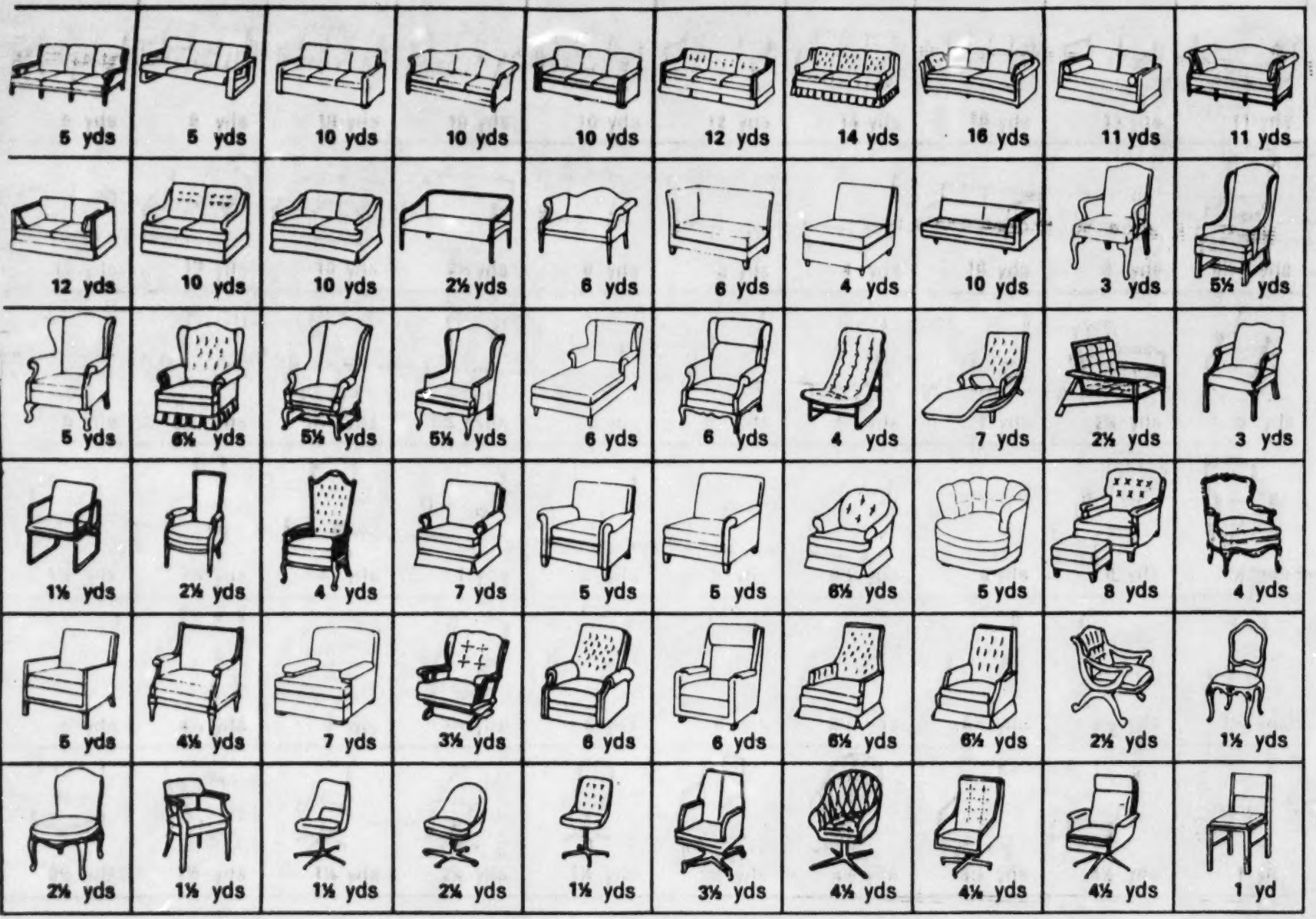


Fig. 3-25. Estimated vinyl or cloth covering yardage needed to reupholster various pieces of furniture. (Uniroyal Corp.)

UPHOLSTERY

Removing Old Cover

To remove the fabric from a chair, it is necessary to start from the bottom and work in reverse as to the building up procedure.

I. Order of removal
   A. Bottom - remove coverings from bottom to provide an opening for further work.
      1. Remove tacks that hold the outside back, outside arms, inside arms and seat.
         a. These tacks are located on the top of the seat rail.
         b. Caution: Attempt not to remove the spring tying twine if the seat appears to be in good condition.

   B. Sides and back
      1. These areas may be hand stitched or tacked - remove so that you can get to the other areas.

   C. Use of tool to aid in removing old covering:
      1. Use the ripping tool and the mallet to remove the tacks.
         a. The mallet is used to strike the ripping tool which is designed for this type of use.
            1) Always strike away from you when removing tacks to prevent accidents and self injury.
            2) Use the correct tool for the job to save and protect the tools.

II. Observations as you remove fabric:
   A. Notice how cover has been put on, record data in notebook - if work has been professionally done.
      1. You will find the bottom cover (probably black cambric, because the glazed surface is more dust resistant) was tacked back from bottom edge and slashed to chair legs for fitting.
      2. The rear back and outside arm cover may have been back-tacked to top using cardboard strip.
         a. Save pieces - they may serve as pattern reference.
      3. Arm Panels and decorative front arm pieces, nailed to the arm front.
         a. Remove to free arm covers.
      4. Entire chair covers may have to be removed.
         a. Look under the seat to determine condition of springs and worn webbing.
            1) Irregular surfaces
            2) Broken springs
            The above indicate that webbing and spring work is necessary, so remove all covering to recondition.

III. Frames
- A. Beginning Upholsterers - not recommended that they attempt to re-design or remodel too much from the frame they start with..
  1. Occasional chair frames - simple in construction not needing much reshaping.
- B. Check frames for:
  1. Termites (page 189-Pope) found it is necessary to:
     - a. Fumigate the frame with ½ kerosene and ½ turpentine. Apply generously, fill holes with Paris Green and wood filler, or,
     - b. Replace with new piece of wood.
  2. Weak joints.
     - a. Replace dowel joints and
     - b. Reglue, using clamps to hold it tight.
  3. Loose screws.
     - a. Remove - fill with glue and sawdust or plastic wood filler. (Plastic wood tends to be a bit brittle when used in tacking again.)
     - b. Reset screw or use larger screw.
     - c. May be necessary to make new anchor hole - use hand drill to make pilot hole.
- C. Use braces in repair work.
  1. Metal braces come in various sizes and shapes. Excellent for loose or weak joints.
  2. Braces can be shaped to the desired form.

IV. Repair of joints:
- A. Frame
  1. Spread joints apart - scrape off old glue and reglue with wood-loc glue.
     - a. Let set for 20 minutes or longer with clamps tightly holding joints together.
     - b. If you are working on the frame, the clamps can be left in place while any pounding is done.
- B. Protect exposed wood from clamp injuries.
  1. Screwheads are sometimes concealed under ornamental wood/buttons.
     - a. Remove button carefully and save.
     - b. Remove screw.
     - c. Fill with glue and replace with longer screw.
- C. Squeaky old rockers.
  1. Remove by applying oil at joints and give entire frame an "oil coat" to enliven the wood.
     - a. Use screws and braces for joints.

V. Repairs in exposed woods.
- A. Dents in wood. May be removed by placing a damp pad over dent, then placing a hot iron on dent to create steam which will cause the wood fibers to "lift".
- B. Small scratches.
  Use a small piece of walnut meat for dark woods.
  Rub it over scratch and it will usually disappear.

Refer to bulletins in file from Johnson Wax for furniture refinishing.

CONSTRUCTION PROCESSES IN UPHOLSTERY

The construction processes in rebuilding upholstered pieces are primarily the same. The following outline is designed to aid the student in planning his work both in class and at home. This outline is recommended to be used along with the work sheets for the various parts of construction.

I. WEBBING
   A. Jute fiber. Comes in 3 to 3½ inch strips or No-Sag (which covers the entire surface).
      1. Placed on the bottom of the frame when springs are to be used.
         Webbing Tacks are used for tacking to rail.
         Webbing is interlaced for extra firmness.

   B. Metal Webbing. Used to reinforce each row of springs.
      1. Placed on bottom of the webbing beneath each row of springs.
         Webbing Nails are used.
         Where possible, place two nails at each end.

II. SPRINGS
   A. Location
      1. Depends on size of opening.
      2. Type of chair and resiliency desired.

   B. Sew springs to webbing, using straight needle and sewing twine.
      1. Catch in four places, preferably through double thickness of webbing.

   C. Tie springs to height (use spring twine)
      1. Across each row of springs in each direction.
      2. Between each row of springs (not needed between spring and frame).
      3. Cross tie each row of springs, i.e., from one corner to the opposite corner, tying everything you cross.

   D. Formula for determining how much twine you will need for each row.
      1. 3 inches for the tacking knot, plus the distance across from one frame to the other over the springs, plus 1 inch for each knot (you tie everything you cross), plus 3 inches for the end tacking knot.
      2. For a return tie - desired in flat seat
         The same formula as above plus enough twine to return to the middle spring in the chair. Be sure to consider the extra knots you will make.

   E. Each spring will be tied in eight places for a large chair or davenport.

   F. Use #8 tacks for tacking spring twine.

III. BURLAP COVERING

A. Used to cover the springs and to give a base for the fillings to be used.

1. Tacked to the top of the chair seat rail.
2. #4 tacks used and tacked through double thickness. Raw edge can be turned up - aids in giving more filling.
3. If you plan to make a rolled edge - with this same piece of burlap - add 5 inches to the original measurement for each roll.

IV. EDGE ROLL

A. Made across all front edges of furniture to save wear of fabric to a hard edge.

1. Made of moss and rolled to size and tacked. (Use #8 tack.)
2. Commercial Roll - can be purchased in several thicknesses. Use webbing nails to fasten

B. Other areas. Edge roll gives shape to chair.

V. FILLINGS

A. Insulators - Sisal

1. Tough fiber placed over burlap covering springs to prevent wear.
2. Cut to cover spring area.

B. Resiliency Padding

1. Moss or hair
   Loose in form and requires a muslin covering to help form the shape.
2. Rubberized hair (Paratex, Hair-flex, etc.)
   Cut to desired shape.
   Fillings will come to the first edge of the frame.
   Can be tacked, sewn or glued into place.
   (When tacking, separate the thickness and tack to lower half so the tack will be covered and will not cause an indentation of the filling. Use #4 tacks.)
3. Foams. Many new and interesting foams are appearing on the market.
   a. Foam Rubber. Glued to a tape, then tacked for security. Cut to shape desired or ordered for the desired shape.
   b. Polyester Foams. Treatment the same as foam rubber.

VI. COTTON PADDINGS

A. Apply cotton padding to the second edge of the frame.

1. Never goes where it can be tacked through when applying the fabric. This sometimes is the cause of pull marks on the covering.
2. Apply cotton over all fillings except foam. (In some cases cotton is applied over foam to help in shifting.)
3. Can be tacked in place by separating cotton and tacking the lower half.

VII. FABRIC

A. Fabric is cut in rectangular forms from the measurements obtained before tearing the chair down.

1. Laying out pieces in paper form aids in handling small pieces of paper to represent the fabric. Label each piece carefully.
2. Consider grainline and pattern in layout work. Make your grainline tell an interesting story.
3. Fit by centering each piece to desired section.
   Center top and bottom, and tack (baste-tack only).
   Center sides and tack in place.
   Fit toward the corners. Cut to fit.

Note: For further instructions with fabric, see work sheet outline on Applying Fabric to Upholstered Furniture.

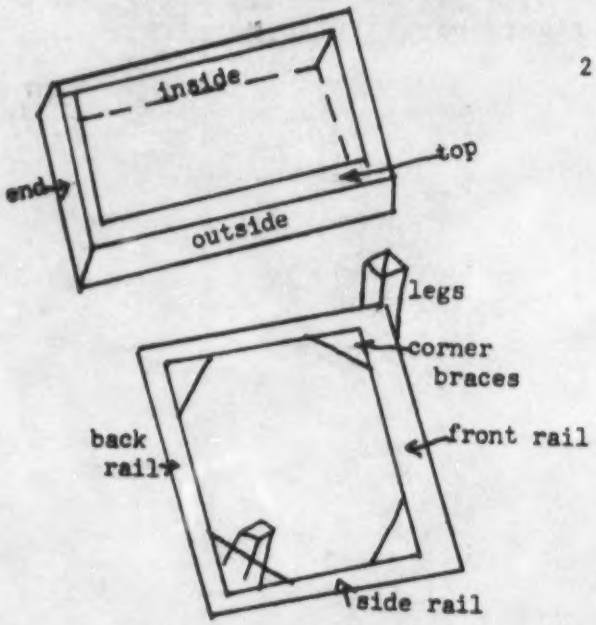
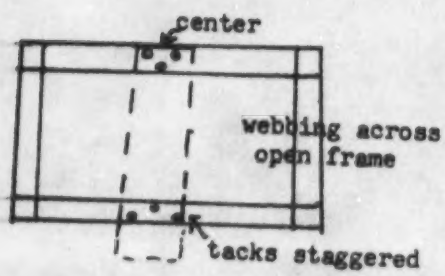
Webbing, Application and Stretching

Tools and equipment needed:

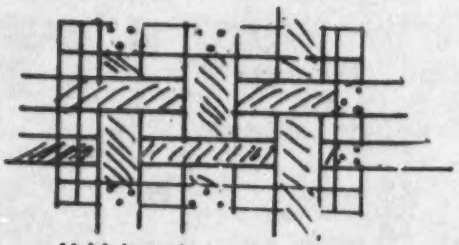
1. Upholstering hammer
2. Webbing stretcher
3. Shears
4. Trestles

Materials needed:

1. Upholstery tacks, size 8-14 depending on condition of frame and the width of lumber.
2. Webbing - Jute fiber. Strip - 3" or 3½"

What to Do	How to Do It
Procedure	
Footstool frame rails	
	1. Place the frame of ottoman or chair on trestles, bottom side up, preparation for installing the webbing.
	2. Determine the amount of webbing by measuring the distance across the frame from front to back and allow a 2" seam allowance. Measure the distance from side to side and allow the 2" seam allowance. The number of strips needed will be determined by the distance of the opening. Measure or fit the strips in this area, making sure that the area in the middle is protected. This area receives the most weight when the chair is in use. The frame will give good protection for the weight so do not crowd the frame area. (The footstool will require three strips of webbing from front to back rail, and two strips from end rail to end rail.)
	3. The frame of the footstool is composed of two side rails and two end rails. Note from inset that each rail has 4 sides, namely, top, bottom, inside and outside.
	4. Use a marking pencil and mark off on the rails where the webbing is to be placed; start the first webbing at the middle of the back rail (mark centers of rails before starting).
	5. Fold end of the webbing back about 1½" and tack through both thicknesses

What to Do	How to Do It



Webbing interwoven and tacked

staggering the tacks. (Staggering the tacks prevents splitting of the wood.) Use 5 #12 tacks on the fold.

6. Now lay the webbing across to the opposite rail and insert webbing stretcher so that, as it is pushed down, the webbing is held in position, drive down three #12 tacks, one on each side and one in the middle on the inner side of the rail. Again stagger the tacks, the end ones at the outer edge and the third one in to the inner rail edge.

7. Cut off webbing, allowing 1½" to turn back and tack through both thicknesses, using 2 tacks to the side of the webbing but on the inner edge, the third tack is in the middle toward the outer edge. See diagram.

8. Be sure the crease is 1/8" from the outer edge, so that it will not show when the bottom is properly covered, the final step in upholstering the ottoman.

9. Judge the location for the next piece of webbing. It is to be tacked halfway between the center strip that you just installed and either end rail. Tack the first end as before and stretch. Drive 3 tacks and cut the webbing; then fold the end over and drive three more tacks.

10. Repeat for the third strip of webbing, which is stretched across the back and front rails.

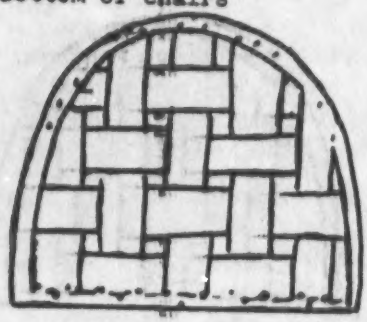
11. Judge the position of the two strips of webbing which are to be tacked from end rail to end rail. Tack one end as before, but be sure to <u>interweave</u> it with the first webbings you have applied.

12. The webbed area will sound like a drum sound when properly applied. This is necessary to give it as much strength as possible. Webbing may have a tendency to stretch and thus sag in time.

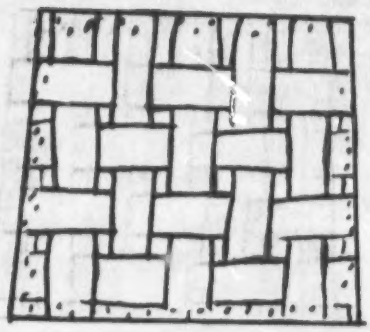
Evaluation: The purpose of interweaving the webbing is to cause the webbing to act as a whole, just as a piece of woven goods is stronger than the same threads laid in rows, one over the other. "Where there is unity, there is strength".

WEBBING (con't)

Bottom of chairs



2 1 c 1 2



2 1 c 1 2

Two types of chairs; one with straight back and one with a round frame.

"C" Center

1. SEATS in chairs and davenports should contain more strips of webbing than the BACKS.

2. Place a strip of webbing for each row of springs.

3. Measure the webbing after it is installed, remembering to include the number of inches turned back.

4. The rear strip of webbing is some distance from the rear or back of the chair frame, whereas the front strip is nearer the front rail of the frame. Most of the support is needed near the front of the chair, the area which holds the most weight. The back area holds a less amount of pressure.

5. Webbing must not be stretched to the breaking point, it must be capable of giving slightly under pressure and at the same time, must be taut enough to prevent bulging below the frame when the springs are tied down.

6. When the strips are stretched in a straight line, they serve as a guide for sewing the springs in a straight line to be tied.

7. It is advisable to start tacking THE STRIPS OF WEBBING NEAR THE CENTER OF THE FRAME OR THE CENTER STRIP. This method will give one an opportunity to get them more even and straighter. (See diagram).

SPRING AND SPRING WORK

Springs are important for comfort, economy and stuffing, and as an aid in holding padded shapes.

I. Kind of springs found in upholstery work.

There is such a variety of styles, sizes and heights that careful consideration is needed in the selection of springs. Heavy-gauge springs are used for seat and couch work, smaller gauge wire for back or pillow springs. The larger the spring waist diameter, the greater the comfort. When springs have large top and bottom diameters, fewer springs are needed and greater resiliency is afforded. Placement apart is from 2 to 4 inches.

A. Seat Springs:

Seat spring sizes vary in diameter from 4 to 4½ inches, in height from 4 to 9 inches for ordinary work; 12 to 14" for unusual requirements. Waists vary from 2½ (large) to 2¼ (med). Springs most commonly used for medium and large furniture seats are 6, 8 and 9 inches high, depending on the frame and style.

Seat springs 4-5 inches high may be used in dining room chair seats. Higher springs will require a tacking rail half the height of the spring to prevent spring swaying.

Style of springs vary. Some are knotted at both ends and are known as cushion springs, some knotted one end, and some open at both ends, in which case one end is bent down to avoid injuring the padding. Knotted ends are placed up unless they are to be placed at seat edges, where a wire-edge is desired.

For a spring edge, expand the spring coil end that is not knotted far enough to permit the spring to stand upright when tied and for the attached edge wire to be even with the seat edge. This may be for seat fronts or front and sides, or entirely around all four edges for stools. Only edge or corner springs are expanded. Others remain as they are. Coils should be expanded 1" or more, to almost reach the frame outside edge as the spring bottom is set against the inside seat rail. Edge wire should be attached before tying springs and expanding should be done before springs are attached.

TORSION CORNER SPRINGS

Ideal for use in supporting edge wire on T shaped frames. 6 ½ inch

SPRING EDGEWIRE

SPRING CONSTRUCTION

I. Number and size of springs.

After the webbing has been tacked in place and the piece of furniture has been turned over on its feet, the next step is to select the number of springs and to determine the size required.

A. The size of the opening will indicate the number of springs to use.

1. They should be equally distributed. Each spring will give freely under pressure without coming in contact with each other.

a. If crowded too closely together they will form a hard seat.
b. Too far apart will result in a weak or soft seat. (When you sit down you may hit the bottom of the seat.)
(To remedy this you can use a smaller spring and use more of them.)

B. The size of the spring is governed by the resiliency required in the finished seat or back.

1. The less they are compressed in tying, the greater the resiliency.

a. The resiliency can never be greater than that permitted by the twine; the higher the tops of the springs above the frame, the more resilient the seat.
b. In seats, the top of the tied-down springs should never, under ordinary circumstances, be less than 3" above the frame. This will permit the spring to be depressed without taking up all of the slack in the spring twine.

1) When tied lower than 3" below the boxing, the twine and burlap will soon tear away from the frame, and stuffing will fall out.
a) When necessary to tie lower than 3" above the frame, the twine should be brought to the bottom of the inside of the frame. Tacked under the bottom edge.
b) The weakest part of the spring is the waist or center. A spring with a wide center is softer than one with a narrow center, and if the spring is too narrow at this point, it may become weak and useless.

II. Placing and fastening springs:

Open end springs, like the ones we used with the footstools, one end or the tip is bent toward the center when the spring is in place. This bent end should be on top. The tip is bent down as a prevention of wearing a hole in the burlap and thus permitting the stuffing to fall in the springs.

A. Placing the springs:

1. Springs can be set about 2" from the front edge of of the frame and an open area be free all the way around.

2. Springs should stand directly in line in both directions. (Otherwise it is difficult to tie them down.)

3. Springs should be set to be free of each other. The distance they are apart will determine how closely they are at the top when tied.

4. The tip or bent down portion should face the inside of the open area.

5. Mark them in place so you can remove the springs for sewing and not get your spring twine encircled with all the springs. Work with stitching the spring the farthest away from you, e.g., the back left corner and work toward the front.

6. Spring edge is made by placing a wire edge across the front line of springs at the top of the spring. The distance the wire extends will vary from chair to chair as to the covering of the spring area.
   a. When using a spring edge, the spring row at the front will stand directly against the front edge frame at the bottom, and the top of the spring will be bent forward to extend even with the front edge frame of the chair.
   b. Position will be determined by the number of springs to be used.

B. Fastening springs to webbing:

1. When placed in proper position, the springs are fastened to the webbing. This is done by sewing.
   a. Springs must be sewn tightly to the webbing or they may wear out the twine and fall over. Care must be taken not to allow the springs to move while sewing.
      1) Use 4 stitches to each spring.
      2) Place the stitches so that the last stitch on a spring will be the point closest to the next spring.
      3) Using the straight needle, make a slip knot and proceeding to the next stitch, holding it firmly with a loop, proceed to all the springs making sure they are tightly tied.

4. Fastening springs to wood:

On furniture frames with wood slats or on a solid base, there are two methods of fastening springs.

a. Using ordinary staples.
b. Using upholsterer's tacks placed next to the bottom coil, one on each side of the coil. The heads of the tacks will prevent the springs from shifting.
c. Regardless of the method of fastening, it will be necessary to place some sort of a silencer below the unfastened coils to prevent rattling when the coil is depressed and the spring hits the wood. The silencer may be a strip of webbing, burlap, or some other waste material.

TYING SPRINGS TO HEIGHT

I. When the springs have been fastened in position, the next step is to tie them down to height. The life of the furniture depends upon the condition of the springs, which in turn depends upon the manner in which they have been tied down. Care must be taken that the springs stand straight and do not slip on the twine when tied down.

A. Tools and equipment:
Hammer, shears, tack puller

B. Materials:
Spring twine, tacks (#8)

C. Procedure:

1. Measuring spring twine.
   a. Round or stuffed seats in chairs or stools. Measure the twine, allowing 3" for the first knot. The distance across, plus 3" for ending knot, plus 1" for each knot and you tie everything you cross.

      e.g. 3" beginning knot 3"
      ending knot 3"
      distance across 16"
      4 knots 4"
      26" needed

   b. Flat seats -- especially where reversible cushions are used, allow enough twine to make a return tie at each end. The return tie must be long enough to go over the top of the first spring, and be tied to the top of the second spring.

      e.g. one rather safe rule would be to measure 2½ times the distance across the area you wish to tie.

2. Cutting spring twine.
   a. You can save time if after you are sure you have a sufficient length, you can cut the number of lengths of equal lengths, (3 lengths for 3 rows of springs).
   b. Tack all of the pieces of twine on one end, e.g. the back edge of a chair or davenport, before tying the springs.

3. Fastening spring twine to the frame.
   a. Place two baste tacks, ½ inch apart, in line with each row of springs.
   b. For round or stuffed seats, where no return tie is necessary, fasten the ends of each twine around the two tacks and drive the tacks down. To make the knot, make a loop of the twine and fold the loop back over itself and you form two rabbit ears and these then can be placed over the baste-tacks. Drive the

tacks down. A third tack through the cord between the tacks gives extra support.

c. On flat seats where a return twine is used, fasten the twine around the two tacks at a proper place to allow for the return twine and drive the tacks down.
   1) This allows two lengths of twine to work with at each row of springs--the first the long one and the short twine for return twine.
   2) The long length will be the one used first.

4. Tying springs to height-----round seats.
   a. Knot the twine to both sides of the top spring edge.
   b. Hold the spring down to height as you tie and go on to second spring.
   c. Loop the twine around the tack, holding the spring in position check for height and drive the tack down. Come around the other tack and drive it down.
   d. Proceed in same manner until all rows are tied. It is easier to start with the middle row and proceed to each side. (It is easier to get the rows held down more even this way.)

5. Tying springs to height--flat seat.
   a. For flat seats, especially where loose cushions are used. Loop the first or long twine around the coil that is the closest to the top of the frame (approximately 3 coils down). Proceed to the top coil of the first spring, continue to tie and knot across the rest of the springs until the last one (usually the one that will be closest to you). Tie the top coil and drop down to the coil most level with the frame, tie and go to the frame tacks. Tie by going in between the two tacks, around the right hand one, in front of both and around the left hand tack. Tack firmly.
   b. Be sure to pull down to the desired height before driving the tacks down.
   c. Follow with the return twine, drawing the outer coil down even with the middle spring. Tie the top of the outer coil. The knotting of the return twine over each loop will hold the spring in its permanent position.
   d. It is suggested you make the return twine long enough to go to the middle spring in both directions. This gives the center section of the seat the most protection for the most weight.

WIRE EDGE AND SPRINGS

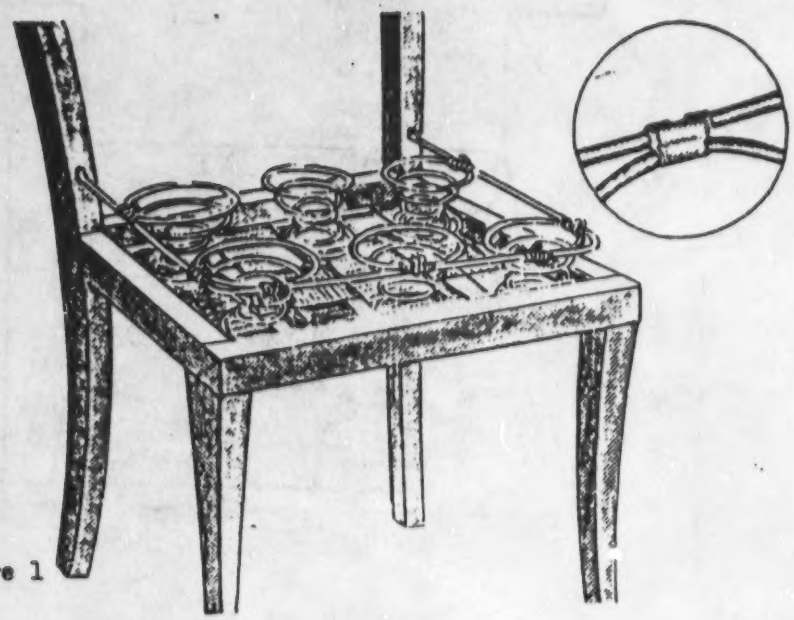
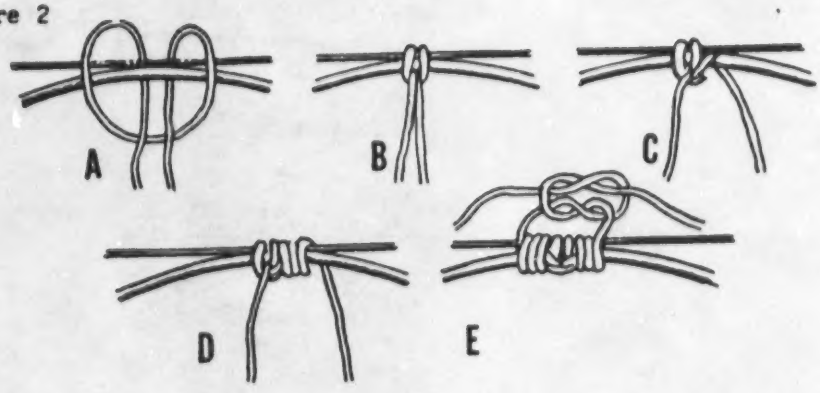


Figure 1

Figure 2



If furniture has an edge wire, Illus. 1, tie outer springs to edge wire or use metal clips to fasten springs to edge wire. Place clip over coil and wire, press together with pliers. Spring may be tied to wire with twine, Illus. 2. Cut twine 8" to 10" long. Make loop, Illus. 2A; pull tight. - B Insert one end C, between spring and wire. D - wrap coil and wire two or three times. Do same on other side, then tie both ends together with a square knot. - E

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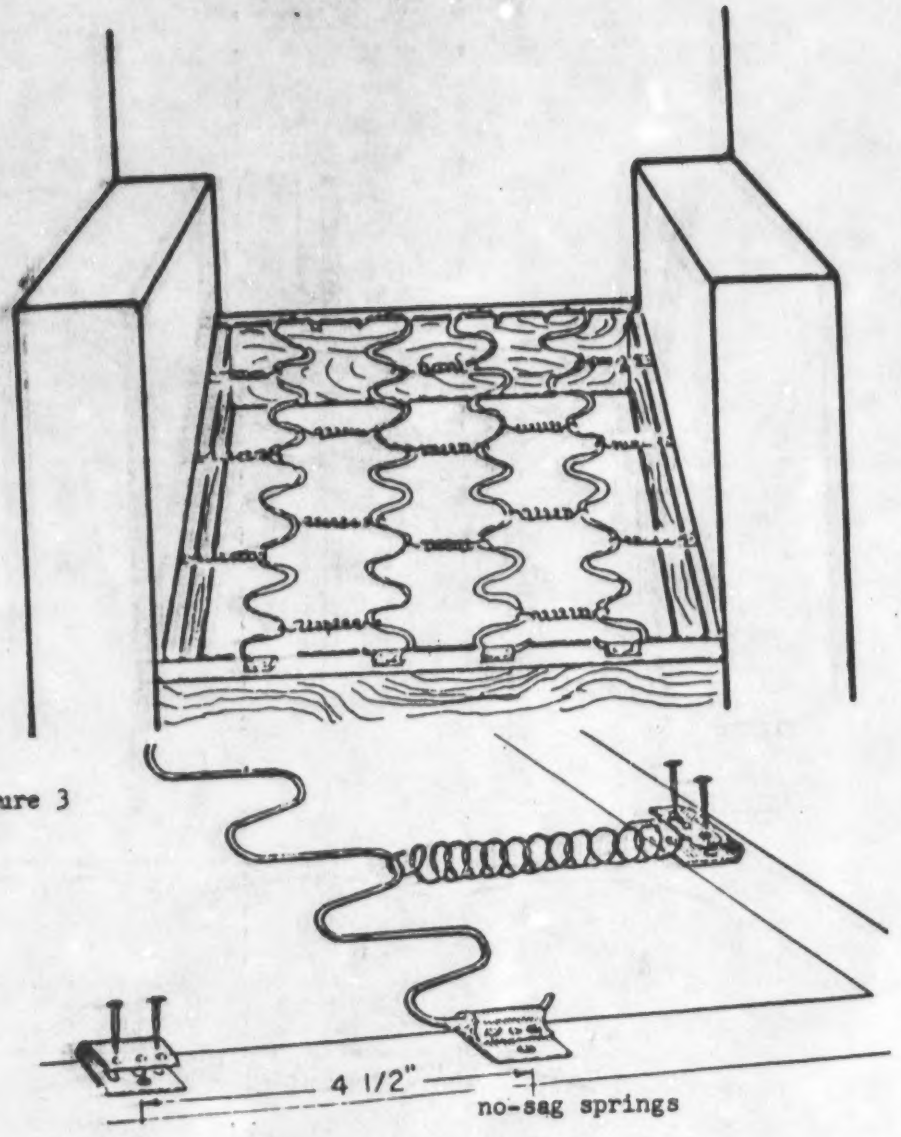

Figure 3

Another way of rebuilding a seat or back is with no-sag or sagless springs, Illus. 3. They require no tying. No-sag spring come in 12 ft. The lengths, are cut to length required and fastened to frame with clips supplied by manufacturer. Space clips 4½" apart. Cover with burlap to size required and tack to frame. Foam rubber can then be used. 2½" to 3" core foam rubber is recommended on seat over no-sag springs; 1½" to 2" core foam for back. Most upholstery supply houses now offer a specially strong, wire woven burlap, that can be used over conventional, or no-sag springs, when additional support is desired. If you are uncertain as to amount of no-sag springs you need, measure overall size of frame, and your upholstery supply house will recommend quantity required.

ATTACHING BURLAP

Although it may be a simple procedure to tack a piece of burlap over springs, care must be taken not to pull the burlap so tight as to depress the springs. This would put all the strain on the burlap, which would soon tear away.

Tools and Equipment

Hammer; shears

Materials

Burlap; tacks, size 4

Procedure

1. Measuring for Burlap.
   Measure the size of the opening, or measure over the springs at the widest point plus seam allowance.

2. Cutting the Burlap.
   Cut a piece of burlap large enough to cover the entire opening, reaching over the springs and down to the frame, allowing 1" for overlapping on each edge. (Starting with 2" on the tape line and measuring across the widest distance will be easier to determine the needed amount).

3. Centering Frame and Burlap.
   Mark the middle of the frame and the piece of burlap in front and back. This will permit getting the burlap on straight and having the same amount on both sides.

4. Tacking the Burlap.
   Allow over lap 3/4" of burlap and tack the centers of the burlap on all four sides. Place tack the burlap in place using a limited number of tacks going from the center toward each corner. Fold edge back and tack through the two thicknesses.

   Pull the burlap tight enough without depressing the edges of the springs. Approximately 1" allowance "pinch" for ease.

   Tack the front edge in the same manner, getting the middle of the burlap edge on the middle of the frame.

   Tack the burlap on the ends and tack to the top of the frame rail.

Questions:

1. What fabric is generally placed over springs?
2. Why is it so important not to pull this fabric so tight that the spring is depressed?
3. How much allowance should be made for overlap?
4. Why should the burlap and the frame be centered in front and back?

Determining the Size of Tack for the Job

The size of tack to use for any purpose in upholstery work is established by trial and errors.

1. Start the test with the smallest size tack you think will do the job. There is no more disheartening sound than that of the splitting of a rail due to the driving of too large a tack.

   a. Drive only one tack to hold the material in question and pull on the material until either the tack is pulled out or the material tears. If the tack is pulled out, it is too small. If the tack remains in the frame without splitting the wood, and the material tears, the tack is satisfactory.

2. Testing to determine the right size of tack to use in installing webbing.

   a. Lay strip of webbing across the seat rail just as if you were to install this webbing.

   b. Drive one tack through the doubled end of the webbing and into the frame. Start with a size #4 tack.

   c. At other rail, insert webbing -- stretch and stretch. If tack pulls out, test with larger size. If tack remains stationary and webbing tears, the tack is of sufficient size. Always begin the test with smallest size that you believe could possibly hold, then work up to the last size which will hold.

	Size Tack
Webbing	#12 - #14
Springs - tying	#10 - #8
Fillings and fabrics	#4 - #6
Fabrics	#3 - #4
Panels - fine fabrics	#2½ - #3
Panels	#2
Gimp finishes - exposed work	Gimp

INSTALLING FINAL COVERINGS

A. Measuring and cutting.

1. From charts.
2. Using old covers as patterns
3. Taking measurements from the furniture
4. Using small scaled drawings

B. Marking and cutting

1. Label pieces

C. Use of stretchers

D. Sewing final covers

1. Attaching stretchers to sides and back sections.
2. Sewing welting strips together and to end
3. Sewing cording inside of strips to form welting
4. Sewing welting to upholstery panels
5. Sewing various cover sections together
6. Making machine sewn seams
7. Blind Stitching
8. Pin or stay tacking
9. Making corners
   a. Pleated square corner
   b. The round corner
10. Blind Tacking (concealed)
11. Fitting around posts
12. Pleating curves

E. Order for installing covers - (usual)

1. Seat
2. Inside arms (or inside back)
3. Inside back (or inside arms)
4. Outside arms
5. Boxings (if any) front and sides
6. Outside back
7. Skirt, if needed -Box or kick pleat

F. Buttons

1. Covering
2. Installing

G. Cushions - Round - Square - Rectangular - T-Shape - Half tee - Irregular

1. Measuring and constructing - cutting
   a. old covers
   b. measures
   c. pattern
2. Use of casings - muslin over rubber
3. Boxings - measuring
4. Laying out and cutting foam for cushions
5. Altering padding shapes
6. Fitting boxing pieces
7. Making zippered rear boxing
8. Assembling boxings and covers
9. Attaching bottom cushion cover
10. Making inner spring cushions
11. Reversible cushions
12. Loose - filled cushions
13. Making compartmented casings
14. Attaching buttons to reversible cushions
15. Making "T" shaped cushions
16. Back cushions - semi-detached

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We would appreciate any comments on the content, the format and the usefulness of this material.

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